Information Builders.

WebFOCUS

New Features
Version 5 Release 3

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Preface

This manual describes the new features available in WebFOCUS Version 5 Release 3. It is intended for all levels of users, including application developers, administrators, and end users.

How This Manual Is Organized

This manual includes the following chapters:

Chapter/Appendix		Contents
1	WebFOCUS Reporting Language Enhancements	Describes new features and enhancements to the WebFOCUS Reporting Language.
2	Developer Studio Enhancements	Describes new features and enhancements to Developer Studio.
3	Managed Reporting Enhancements	Describes new features that enhance Managed Reporting, including User Administration Services, Dashboard, the applet environment, and migration and extract utilities.
4	Ad Hoc Reporting Enhancements	Describes new features that enhance ad hoc reporting capabilities. These enhancements include OLAP, Report Assistant, and Graph Assistant features.
5	ReportCaster Enhancements	Describes new features and enhancements to ReportCaster.
6	WebFOCUS Client Enhancements	Describes new features that enhance the WebFOCUS Client and National Language Support (NLS).
7	WebFOCUS Graphics	Provides an overview of WebFOCUS Graphics and the different types of graphs you can create.
8	WebFOCUS Maintain Enhancements	Describes the enhancements that have been made to the Maintain Language, Server, and Development environments.
9	WebFOCUS Web Services	Describes how you can interact with a variety of WebFOCUS features using Web services.

Chapter/Appendix		Contents
10	Security Enhancements	Describes the security enhancements for WebFOCUS.
11	Server Enhancements	Describes new features that enhance the WebFOCUS Reporting Server.
12	Adapter Enhancements	Describes support for new DBMSs, new versions of existing DBMSs, and features within DBMSs.
13	DataMigrator Enhancements	Describes enhancements to DataMigrator (previously known as ETL Manager).
14	Resource Analyzer and Resource Governor Enhancements	Describes enhancements to Resource Analyzer and Resource Governor.

Documentation Conventions

The following conventions apply throughout this manual:

Convention	Description
`THIS TYPEFACE` or `this typeface`	Denotes syntax that you must enter exactly as shown.
`this typeface`	Represents a placeholder (or variable) in syntax for a value that you or the system must supply.
`underscore`	Indicates a default setting.
this typeface	Represents a placeholder (or variable), a cross-reference, or an important term. It may also indicate a button, menu item, or dialog box option you can click or select.
this typeface	Highlights a file name or command.
Key + Key	Indicates keys that you must press simultaneously.
`{ }`	Indicates two or three choices; type one of them, not the braces.
`[ ]`	Indicates a group of optional parameters. None are required, but you may select one of them. Type only the parameter in the brackets, not the brackets.
`|`	Separates mutually exclusive choices in syntax. Type one of them, not the symbol.
`...`	Indicates that you can enter a parameter multiple times. Type only the parameter, not the ellipsis points (…).
`.` `.` `.`	Indicates that there are (or could be) intervening or additional commands.

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Information You Should Have

To help our consultants answer your questions most effectively, please provide the following information when you call:

- Your six-digit site code (*xxxx.xx*).
- Your WebFOCUS configuration:
  - The front-end you are using, including vendor and release.
  - The communications protocol (for example, TCP/IP or HLLAPI), including vendor and release.
  - The software release.
  - Your server version and release. You can find this information using the *Version* option in the Web Console.
- The stored procedure (preferably with line numbers) or FOCUS commands being used in server access.
- The name of the Master File and Access File.

- The exact nature of the problem:
  - Are the results or the format incorrect? Are the text or calculations missing or misplaced?
  - The error message and return code, if applicable.
  - Is this related to any other problem?
- Has the procedure or query ever worked in its present form? Has it been changed recently? How often does the problem occur?
- What release of the operating system are you using? Has it, WebFOCUS, your security system, communications protocol, or front-end software changed?
- Is this problem reproducible? If so, how?
- Have you tried to reproduce your problem in the simplest form possible? For example, if you are having problems joining two data sources, have you tried executing a query containing the code to access a single data source?
- Do you have a trace file?
- How is the problem affecting your business? Is it halting development or production? Do you just have questions about functionality or documentation?

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CHAPTER 1

WebFOCUS Reporting Language Enhancements

This chapter describes WebFOCUS reporting language new features in Version 5 Release 3.

Topics:

- Combinations of Summary Commands
- Non-Overridable User Passwords (SET PERMPASS)
- Fully Qualified File Names in -INCLUDE Commands
- Assigning Column Numbers Only to Report Output Columns
- Creating a Standard Quote-Delimited Character String
- Producing ANSI-compliant Empty Reports
- Using Date System Amper Variables in Master File DEFINEs
- Creating a Drill Through PDF Compound Report
- Excel Table of Contents Feature
- Excel Compound Reports
- Displaying Multiple Excel Reports Simultaneously
- JPEG Format Support
- Preventing Messages With CREATE FILE
- Preserving Filters With Joins
- Preventing Propagation of SUBTOTAL and RECOMPUTE to the Grand Total
- Increased Number of Joins
- Raised FML Rows Limit
- FMLLIST Function: Retrieving an FML Tag List
- FMLFOR Function: Retrieving FML Tag Values
- FMLCAP Function: Retrieving FML Hierarchy Captions
- Increased Limit for MATCH FILE
- Creating Visual Discovery Output Files

Combinations of Summary Commands

How to:

Use Summary Commands

Example:

Using SUBTOTAL and RECOMPUTE in a Request

Using SUB-TOTAL With Multiple Summary Commands

Using Multiple Summary Commands With Prefix Operators

Propagation of Summary Commands With Field Lists

Reference:

Usage Notes for Combinations of Summary Commands

You can specify a different summary operation for each sort break (BY field).

If you have multiple summary commands for the same sort field, the following message displays and the last summary command specified in the request is used:

```
(FOC36359) MORE THAN 1 SUBTOTAL/SUB-TOTAL/RECOMPUTE/SUMMARIZE
```

There is more than one SUBTOTAL/SUB-TOTAL/RECOMPUTE/SUMMARIZE on the same key field which is not allowed. The last one specified will override the rest.

SUMMARIZE and SUB-TOTAL, which propagate their summary operations to higher level sort breaks, skip those fields at higher level sort breaks that have their own summary commands. The propagation of summary operations depends on whether prefix operator processing is used for summary lines. If prefix operators are:

- Not used on summary lines or if you issue the SET SUMMARYLINES=OLD command, prefix operator processing is not used for the request. In this case, if any summary command specifies a field list, only the fields specified on the summary line field lists are populated on the report.

- Used on summary lines or if you issue the SET SUMMARYLINES=NEW command, prefix operator processing is used for the request. In this case, SUB-TOTAL and SUMMARIZE propagate to:
  - All fields at higher level sort breaks that do not have their own summary command.
  - Fields not specified in the field list at higher level sort breaks that do have their own summary commands (columns that would have been empty). Note that this is the only technique that allows different fields at the same sort break to have different summary options.

Prefix operators on summary lines result in the same values whether the command is RECOMPUTE/SUMMARIZE or SUBTOTAL/SUB-TOTAL. For a computed field, the prefix operator is not applied, the value is recalculated using the expression in the COMPUTE command and the values from the summary line.

When you use different summary commands for different sort fields, the default grand total row inherits the summary command associated with the first sort field in the request. You can change the operation performed at the grand total level by using the ON TABLE phrase to specify a specific summary command.

Note: The grand total is considered the highest sort level. Therefore, although you can use the SUMMARIZE or SUB-TOTAL command at the grand total level, these commands apply only to the grand total and are not propagated to any other line on the report. On the grand total level SUMMARIZE operates as a RECOMPUTE command, and SUB-TOTAL operates as a SUBTOTAL command.

Syntax: How to Use Summary Commands

At a sort break, use the following syntax:

```
{BY|ON} breakfield [AS 'text1'] sumoption [MULTILINES]
        [pref.] [*|[field1 [[pref2.]field2 ...]]]
        [AS 'text2'] [WHEN expression;]
```

To replace the default grand total, use the following syntax

```
ON TABLE sumoption [pref.][field1 [[pref2.]field2 ...]] [AS 'text2']
```

where:

breakfield

Is the sort field whose change in value triggers the summary operation.

sumoption

Can be one of the following: SUBTOTAL, SUB-TOTAL, RECOMPUTE, or SUMMARIZE.

'text1'

Is the column heading to use for the break field on the report output.

`MULTILINES`

Suppresses the printing of a summary line for every sort break that has only one detail line. Note that MULTILINES suppresses the summary line even if a prefix operator is used to specify a different operation for the summary line. MULTI-LINES is a synonym for MULTILINES.

`pref.`

Is a prefix operator. When specified without a field list, the prefix operator is applied to every numeric column in the report output and every numeric column is populated with values on the summary row.

`*`

Includes all display fields on the summary line. If a prefix operator is specified, it is applied to all fields. If the prefix operator is not supported with alphanumeric fields, alphanumeric fields are not included on the summary line.

`[field1 [field2 ... fieldn]]`

Produces the type of summary specified by *`sumoption`* for the listed fields. If no field names are listed, the summary is produced for every numeric column in the report output.

`pref. field1 [field2 ... fieldn] [pref2. fieldm ...]`

The first prefix operator is applied to field1 through fieldn. The second prefix operator is applied to fieldm. Only the fields specified are populated with values on the summary row. Each prefix operator must be separated by a blank space from the following field name.

`'text2'`

Is the text that prints on the left of the summary row.

`expression`

Is an expression that determines whether the summary operation is performed at each break.

Example: Using SUBTOTAL and RECOMPUTE in a Request

In the following request, the first sort field specified is COPIES, which is associated with the RECOMPUTE command. Therefore, on the grand total line, the value of RATIO is correctly recomputed and the values of LISTPR and WHOLESALEPR are summed (because this is the default operation when the field is not calculated by a COMPUTE command).

```
TABLE FILE MOVIES
PRINT DIRECTOR LISTPR WHOLESALEPR
COMPUTE RATIO = LISTPR/WHOLESALEPR;
BY COPIES
BY RATING
WHERE COPIES LT 3
WHERE DIRECTOR EQ 'DISNEY W.' OR 'HITCHCOCK A.'
ON COPIES RECOMPUTE AS '*REC: '
ON RATING SUBTOTAL AS '*SUB:  '
END
```

The output is:

COPIES	RATING	DIRECTOR	LISTPR	WHOLESALEPR	RATIO
1	NR	DISNEY W.	29.95	15.99	1.87
*SUB:	NR		29.95	15.99	1.87
*REC:	1		29.95	15.99	1.87
2	NR	HITCHCOCK A.	19.98	9.00	2.22
*SUB:	NR		19.98	9.00	2.22
	PG	HITCHCOCK A.	19.98	9.00	2.22
		HITCHCOCK A.	19.98	9.00	2.22
*SUB:	PG		39.96	18.00	4.44
	PG13	HITCHCOCK A.	19.98	9.00	2.22
*SUB:	PG13		19.98	9.00	2.22
	R	HITCHCOCK A.	19.98	9.00	2.22
*SUB:	R		19.98	9.00	2.22
*REC:	2		99.90	45.00	2.22
TOTAL			129.85	60.99	2.13

If you reverse the BY fields, the grand total line sums the RATIO values as well as the LISTPR and WHOLESALEPR values because the SUBTOTAL command controls the grand total line:

```
TOTAL                          129.85        60.99           12.97
```

You can change the operation performed at the grand total level by adding the following command to the request:

```
ON TABLE RECOMPUTE
```

The grand total line then displays the recomputed values:

```
TOTAL                          129.85        60.99            2.13
```

Example: Using SUB-TOTAL With Multiple Summary Commands

In the following request, the SUB-TOTAL command propagates its operation to the DIRECTOR sort field (see the total line for HITCHCOCK, on which the RATIO values are subtotaled, not recomputed).

SUB-TOTAL is not propagated to the RATING sort field which has its own RECOMPUTE command, and for this sort field the RATIO value is recomputed.

The grand total line is recomputed because RECOMPUTE is performed on a higher level sort field than SUB-TOTAL.

```
TABLE FILE MOVIES
PRINT LISTPR WHOLESALEPR
COMPUTE RATIO = LISTPR/WHOLESALEPR;
BY DIRECTOR
BY RATING
BY COPIES
WHERE COPIES LT 3
WHERE DIRECTOR EQ 'HITCHCOCK A.'
ON COPIES SUB-TOTAL AS '*SUB: '
ON RATING RECOMPUTE AS '*REC:  '
END
```

The output is:

DIRECTOR	RATING	COPIES	LISTPR	WHOLESALEPR	RATIO
HITCHCOCK A.	NR	2	19.98	9.00	2.22
*SUB: 2			19.98	9.00	2.22
*REC: NR			19.98	9.00	2.22
	PG	2	19.98	9.00	2.22
			19.98	9.00	2.22
*SUB: 2			39.96	18.00	4.44
*REC: PG			39.96	18.00	2.22
	PG13	2	19.98	9.00	2.22
*SUB: 2			19.98	9.00	2.22
*REC: PG13			19.98	9.00	2.22
	R	2	19.98	9.00	2.22
*SUB: 2			19.98	9.00	2.22
*REC: R			19.98	9.00	2.22
*TOTAL DIRECTOR HITCHCOCK A.			99.90	45.00	11.10
TOTAL			99.90	45.00	2.22

Example: Using Multiple Summary Commands With Prefix Operators

The following request prints the average value of LISTPR and the recomputed value of RATIO on the lines associated with sort field RATING. The SUB-TOTAL command associated with sort field COPIES is propagated to all fields on the DIRECTOR sort field lines and to the WHOLESALEPR and RATIO1 columns associated with the RATING sort field. The grand total line is suppressed for this request.

```
TABLE FILE MOVIES
PRINT LISTPR WHOLESALEPR
COMPUTE RATIO/D6.2 = LISTPR/WHOLESALEPR;
COMPUTE RATIO1/D6.2 = LISTPR/WHOLESALEPR;
BY DIRECTOR
BY RATING
BY COPIES
WHERE COPIES LT 3
  WHERE DIRECTOR EQ 'KAZAN E.'
  ON RATING  RECOMPUTE  AVE. LISTPR  RATIO AS '*REC:  '
  ON COPIES  SUB-TOTAL                AS '*SUB:  '
  ON TABLE NOTOTAL
END
```

On the output:

- The values of WHOLESALEPR and RATIO1 on the row labeled *REC are subtotals because of propagation of the SUB-TOTAL command to the fields not specified in the RECOMPUTE command.
- The LISTPR value is an average and the value of RATIO (which has the same definition as RATIO1) is recomputed because these two fields are specified in the RECOMPUTE command.
- The SUB-TOTAL command is propagated to the DIRECTOR row.

The output is:

DIRECTOR	RATING	COPIES	LISTPR	WHOLESALEPR	RATIO	RATIO1
KAZAN E.	NR	1	24.98	14.99	1.67	1.67
*SUB: 1			24.98	14.99	1.67	1.67
		2	19.95	9.99	2.00	2.00
*SUB: 2			19.95	9.99	2.00	2.00
*REC: NR			22.47	24.98	.90	3.66
*TOTAL DIRECTOR KAZAN E.			44.93	24.98	3.66	3.66

Example: Propagation of Summary Commands With Field Lists

In the following request, the RECOMPUTE command has a field list.

```
SET SUMMARYLINES = OLD
TABLE FILE MOVIES
PRINT LISTPR WHOLESALEPR
COMPUTE RATIO/D6.2 = LISTPR/WHOLESALEPR;
COMPUTE RATIO1/D6.2 = LISTPR/WHOLESALEPR;
BY DIRECTOR
BY RATING
BY COPIES
WHERE COPIES LT 3
  WHERE DIRECTOR EQ 'KAZAN E.'
  ON RATING RECOMPUTE LISTPR RATIO AS '*REC:  '
  ON COPIES SUB-TOTAL AS '*SUB:  '
END
```

With SUMMARYLINES=OLD, only those fields have values on the report output:

DIRECTOR	RATING	COPIES	LISTPR	WHOLESALEPR	RATIO	RATIO1
KAZAN E.	NR	1	24.98	14.99	1.67	1.67
*SUB: 1			24.98		1.67	
		2	19.95	9.99	2.00	2.00
*SUB: 2			19.95		2.00	
*REC: NR			44.93		1.80	
*TOTAL DIRECTOR KAZAN E.			44.93		3.66	
TOTAL			44.93		1.80	

With SUMMARYLINES=NEW, SUB-TOTAL propagates to all of the columns that would otherwise be unpopulated. The grand total line inherits the RECOMPUTE command for the fields listed in its field list, and the SUB-TOTAL command propagates to the other columns:

DIRECTOR	RATING	COPIES	LISTPR	WHOLESALEPR	RATIO	RATIO1
KAZAN E.	NR	1	24.98	14.99	1.67	1.67
*SUB: 1			24.98	14.99	1.67	1.67
		2	19.95	9.99	2.00	2.00
*SUB: 2			19.95	9.99	2.00	2.00
*REC: NR			44.93	24.98	1.80	3.66
*TOTAL DIRECTOR KAZAN E.			44.93	24.98	3.66	3.66
TOTAL			44.93	24.98	1.80	3.66

Reference: Usage Notes for Combinations of Summary Commands

- Summary processing differs for summary commands that have prefix operators and summary lines that do not use prefix operators (see the *Creating Reports With WebFOCUS Language* manual for details). If any summary command uses prefix operators, the entire request uses prefix operator processing. If processing without prefix operators is initiated, but a subsequent field requires prefix operator processing, the following message is generated and processing halts:

  ```
  (FOC36376)  CANNOT COMBINE SUBTOTAL/RECOMPUTE STYLES WHEN
  SUMMARYLINES=OLD
  ```

  You can prevent this message by setting SUMMARYLINES=NEW to invoke prefix operator processing.

- SET SUMMARYLINES=EXPLICIT affects propagation of summary commands to the grand total line by making it consistent with the behavior for any sort break. Therefore, with this setting in effect, SUB-TOTAL and SUMMARIZE propagate to the grand total line but SUBTOTAL and RECOMPUTE do not.

Non-Overridable User Passwords (SET PERMPASS)

How to:

Set a Non-Overridable User Password

Example:

Setting a Non-Overridable User Password

Reference:

Usage Notes for Non-Overridable User Passwords

The PERMPASS parameter establishes a user password that remains in effect throughout a session or connection. You can issue this setting in any supported profile but is most useful when established for an individual user by setting it in a user profile. It cannot be set in an ON TABLE phrase. It is recommended that it not be set in EDASPROF because it would then apply to all users.

All security rules established in the DBA sections of existing Master Files are respected when PERMPASS is in effect. The user cannot issue the SET PASS or SET USER command to change to a user password with different security rules. Any attempt to do so generates the following message:

```
permanent PASS is in effect. Your PASS will not be honored.
VALUE WAS NOT CHANGED
```

Only one permanent password can be established in a session. Once it is set, it cannot be changed within the session.

Syntax: How to Set a Non-Overridable User Password

```
SET PERMPASS=userpass
```

where:

userpass

Is the user password used for all access to data sources with DBA security rules established in their associated Master Files.

Example: Setting a Non-Overridable User Password

Consider the MOVIES Master File with the following DBA rules in effect:

```
DBA=USER1,$
USER = USERR,  ACCESS = R ,$
USER = USERU,  ACCESS = U ,$
USER = USERW,  ACCESS = W ,$
USER = USERRW, ACCESS = RW,$
```

The following FOCEXEC sets a permanent password:

```
SET PERMPASS = USERU
TABLE FILE MOVIES
PRINT TITLE BY DIRECTOR
END
```

The user has ACCESS=U and, therefore, is not allowed to issue a table request against the file:

```
(FOC047) THE USER DOES NOT HAVE SUFFICIENT ACCESS RIGHTS TO THE FILE:
CAR
BYPASSING TO END OF COMMAND
```

The permanent password cannot be changed:

```
SET PERMPASS = USERRW
```

```
permanent PASS is in effect. Your PASS will not be honored.
VALUE WAS NOT CHANGED
```

The user password cannot be changed:

```
SET PASS = USERRW

permanent PASS is in effect. Your PASS will not be honored.
VALUE WAS NOT CHANGED
```

Reference: Usage Notes for Non-Overridable User Passwords

If you use FOCUSID to set passwords externally, these external passwords may be overridable or non-overridable. If they are non-overridable, they take precedence over the PERMPASS setting.

Fully Qualified File Names in -INCLUDE Commands

How to:

Use a Fully Qualified File Name on UNIX

Use a Fully Qualified File Name on Microsoft Windows

Example:

Using a Fully Qualified Name in a -INCLUDE Command

The -INCLUDE Dialogue Manager command can accept fully qualified file names so that files outside of the standard search path can be inserted into procedures. This technique reduces the time it takes to search for a specific procedure, providing a performance benefit.

Relative paths are not supported in the -INCLUDE command; you must use the fully qualified platform-specific file name. The limit for a fully qualified platform-specific file name is defined by the operating system (as long as it is within the 32K length maximum for a FOCEXEC line).

The fully qualified name applies only to the -INCLUDE command in which it is specified; it is not inherited by other -INCLUDE commands.

Syntax: How to Use a Fully Qualified File Name on UNIX

```
-INCLUDE /path/filename.ext
```

where:

path

Is the fully qualified path to the file that contains the FOCEXEC.

filename

Is the name of the file that contains the FOCEXEC.

ext

Is the extension of the file that contains the FOCEXEC.

Syntax: How to Use a Fully Qualified File Name on Microsoft Windows

```
-INCLUDE drive:\path\filename.ext
```

where:

drive

Is the drive that contains the path to the FOCEXEC.

path

Is the fully qualified path to the file that contains the FOCEXEC.

filename

Is the name of the file that contains the FOCEXEC.

ext

Is the extension of the file that contains the FOCEXEC.

Example: Using a Fully Qualified Name in a -INCLUDE Command

Assume the FOCEXEC named HEADINGS contains the following heading text for the request:

```
HEADING
"THIS IS THE INCLUDED HEADING FILE"
" "
```

Microsoft Windows example:

```
TABLE FILE EMPLOYEE
-INCLUDE c:\ibi\srv55\mydataarea\headings.fex
PRINT CURR_SAL BY LAST_NAME BY FIRST_NAME
WHERE DEPARTMENT EQ 'MIS'
END
```

UNIX example:

```
TABLE FILE EMPLOYEE
-INCLUDE /u2/prog/headings.data
PRINT CURR_SAL BY LAST_NAME BY FIRST_NAME
WHERE DEPARTMENT EQ 'MIS'
END
```

The output is:

THIS IS THE INCLUDED HEADING FILE

LAST_NAME	FIRST_NAME	CURR_SAL
BLACKWOOD	ROSEMARIE	$21,780.00
CROSS	BARBARA	$27,062.00
GREENSPAN	MARY	$9,000.00
JONES	DIANE	$18,480.00
MCCOY	JOHN	$18,480.00
SMITH	MARY	$13,200.00

Assigning Column Numbers Only to Report Output Columns

In this section:

Using Column Notation in a Report Request

How to:

Control the Creation of Column References

Example:

Using Column Notation in a Non-FML Request With CNOTATION=ALL

Using Column Notation in a Non-FML Request With CNOTATION=PRINTONLY

Using CNOTATION=PRINTONLY With Column Numbers in an FML Request

Using CNOTATION=PRINTONLY to RECAP Over Contiguous Columns in an FML Request

Using CNOTATION=PRINTONLY With Relative Column Addressing in an FML Request

Using CNOTATION=PRINTONLY With Cell Notation in an FML Request

Using NOPRINT, Field Reformatting, and COMPUTE With Column Notation

Reference:

Usage Notes for SET CNOTATION

Column notation assigns a sequential column number to each column in the internal matrix created for a report request. You can use column notation in COMPUTE and RECAP commands to refer to these columns in your request.

Because column numbers refer to columns in the internal matrix, they are assigned after retrieval and aggregation are completed. Columns not actually displayed on the report output may exist in the internal matrix. For example, calculated values used in the request generate one or more columns in the internal matrix. Fields with the NOPRINT option take up a column in the internal matrix, and a reformatted field generates an additional column for the reformatted value. Certain RECAP calculations such as FORECAST or REGRESS generate multiple columns in the internal matrix.

BY fields are not assigned column numbers but, by default, every other column in the internal matrix is assigned a column number, which means that you have to account for all of the internally generated columns if you want to refer to the appropriate column value in your request. You can change this default column assignment behavior with the SET CNOTATION=PRINTONLY command, which assigns column numbers only to columns that display on the report output.

Syntax: How to Control the Creation of Column References

```
SET CNOTATION={ALL|PRINTONLY}
```

where:

`ALL`

Assigns column reference numbers to every column in the internal matrix. ALL is the default value.

`PRINTONLY`

Assigns column reference numbers only to columns that display on the report output.

Note: This setting is not supported in an ON TABLE phrase.

Using Column Notation in a Report Request

To create a column reference in a request, you can:

- Preface the column number with a C in a non-FML request.
- Use the column number as an index in conjunction with a row label in an FML request. With this type of notation, you can specify a specific column, a relative column number, or a sequence or series of columns. See the *Creating Reports With WebFOCUS Language* manual for a complete description of this notation.
- Refer to a particular cell in an FML request using the notation E(*r*,*c*), where *r* is a row number and *c* is a column number. See the *Creating Reports With WebFOCUS Language* manual for a complete description of this notation.

Example: Using Column Notation in a Non-FML Request With CNOTATION=ALL

In the following request with CNOTATION=ALL, the product of C1 and C2 does not calculate TRANSTOT times QUANTITY because the reformatting generates additional columns.

```
SET CNOTATION = ALL

TABLE FILE VIDEOTRK
SUM TRANSTOT/D12.2 QUANTITY/D12.2
AND COMPUTE
PRODUCT = C1 * C2;
BY TRANSDATE
END
```

The output is:

TRANSDATE	TRANSTOT	QUANTITY	PRODUCT
91/06/17	57.03	12.00	3,252.42
91/06/18	21.25	2.00	451.56
91/06/19	38.17	5.00	1,456.95
91/06/20	14.23	3.00	202.49
91/06/21	44.72	7.00	1,999.88
91/06/24	126.28	12.00	15,946.64
91/06/25	47.74	8.00	2,279.11
91/06/26	40.97	2.00	1,678.54
91/06/27	60.24	9.00	3,628.86
91/06/28	31.00	3.00	961.00

BY fields do not get a column reference, so the first column reference is for TRANSTOT with its original format, then the reformatted version. Next is QUANTITY with its original format and then the reformatted version. Last is the calculated value, PRODUCT:

Example: Using Column Notation in a Non-FML Request With CNOTATION=PRINTONLY

Setting CNOTATION=PRINTONLY assigns column references to the output columns only. In this case the product of C1 and C2 does calculate TRANSTOT times QUANTITY.

```
SET CNOTATION = PRINTONLY

TABLE FILE VIDEOTRK
SUM TRANSTOT/D12.2 QUANTITY/D12.2
AND COMPUTE
PRODUCT = C1 * C2;
BY TRANSDATE
END
```

The output is:

TRANSDATE	TRANSTOT	QUANTITY	PRODUCT
91/06/17	57.03	12.00	684.36
91/06/18	21.25	2.00	42.50
91/06/19	38.17	5.00	190.85
91/06/20	14.23	3.00	42.69
91/06/21	44.72	7.00	313.04
91/06/24	126.28	12.00	1,515.36
91/06/25	47.74	8.00	381.92
91/06/26	40.97	2.00	81.94
91/06/27	60.24	9.00	542.16
91/06/28	31.00	3.00	93.00

Example: Using CNOTATION=PRINTONLY With Column Numbers in an FML Request

In the following request, the reformatting of fields generates additional columns in the internal matrix. In the second RECAP expression, note that because of the CNOTATION setting:

- TOTCASH(1) refers to total cash in displayed column 1.
- TOTCASH(2) refers to total cash in displayed column 2.
- The resulting calculation is displayed in column 2 of the row labeled CASH GROWTH(%).
- The RECAP value is only calculated for the column specified.

```
SET CNOTATION=PRINTONLY
DEFINE FILE LEDGER
CUR_YR/I5C=AMOUNT;
LAST_YR/I5C=.87*CUR_YR - 142;
END
TABLE FILE LEDGER
SUM CUR_YR/F9.2 AS 'CURRENT,YEAR'
LAST_YR/F9.2 AS 'LAST,YEAR'

FOR ACCOUNT
1010 AS 'CASH ON HAND'                                    OVER
1020 AS 'DEMAND DEPOSITS'                                 OVER
1030 AS 'TIME DEPOSITS'                                   OVER
BAR                                                       OVER
RECAP TOTCASH/F9.2C= R1 + R2 + R3; AS 'TOTAL CASH'        OVER
" "                                                       OVER
RECAP GROCASH(2)/F9.2C=100*TOTCASH(1)/TOTCASH(2) - 100;
AS 'CASH GROWTH(%)'
END
```

The output is:

	CURRENT YEAR	LAST YEAR
CASH ON HAND	8784.00	7216.00
DEMAND DEPOSITS	4494.00	3483.00
TIME DEPOSITS	7961.00	6499.00
TOTAL CASH	21239.00	17198.00
CASH GROWTH(%)		23.50

Example: Using CNOTATION=PRINTONLY to RECAP Over Contiguous Columns in an FML Request

In this example, the RECAP calculation for ATOT occurs only for displayed columns 2 and 3, as specified in the request. No calculation is performed for displayed column 1.

```
SET CNOTATION=PRINTONLY
DEFINE FILE LEDGER
CUR_YR/I5C=AMOUNT;
LAST_YR/I5C=.87*CUR_YR - 142;
NEXT_YR/I5C=1.13*CUR_YR + 222;
END
TABLE FILE LEDGER
SUM NEXT_YR/F9.2 CUR_YR/F9.2 LAST_YR/F9.2
FOR ACCOUNT
10$$ AS 'CASH'                       OVER
1100 AS 'ACCOUNTS RECEIVABLE'        OVER
1200 AS 'INVENTORY'                  OVER
BAR                                  OVER
RECAP ATOT(2,3)/I5C = R1 + R2 + R3;
AS 'ASSETS  ACTUAL'
END
```

The output is:

	NEXT_YR	CUR_YR	LAST_YR
CASH	25992.00	21239.00	17198.00
ACCOUNTS RECEIVABLE	21941.00	18829.00	15954.00
INVENTORY	31522.00	27307.00	23329.00
ASSETS ACTUAL		.00	.00

Example: Using CNOTATION=PRINTONLY With Relative Column Addressing in an FML Request

This example computes the change in cash (CHGCASH) for displayed columns 1 and 2.

```
SET CNOTATION=PRINTONLY
DEFINE FILE LEDGER
CUR_YR/I5C=AMOUNT;
LAST_YR/I5C=.87*CUR_YR - 142;
NEXT_YR/I5C=1.13*CUR_YR + 222;
END
TABLE FILE LEDGER
SUM NEXT_YR/F9.2 CUR_YR/F9.2 LAST_YR/F9.2
FOR ACCOUNT
10$$ AS 'TOTAL CASH' LABEL TOTCASH           OVER
" "                                          OVER
RECAP CHGCASH(1,2)/I5SC = TOTCASH(*) - TOTCASH(*+1); AS 'CHANGE IN CASH'
END
```

The output is:

	NEXT_YR	CUR_YR	LAST_YR
TOTAL CASH	25992.00	21239.00	17198.00
CHANGE IN CASH		.00	.00

Example: Using CNOTATION=PRINTONLY With Cell Notation in an FML Request

In this request, two RECAP expressions derive VARIANCEs (EVAR and WVAR) by subtracting values in four displayed columns (1, 2, 3, 4) in row three (PROFIT); these values are identified using cell notation (r,c).

```
SET CNOTATION=PRINTONLY
TABLE FILE REGION
SUM E_ACTUAL/F9.2 E_BUDGET/F9.2 W_ACTUAL/F9.2 W_BUDGET/F9.2
FOR ACCOUNT
3000 AS 'SALES'                          OVER
3100 AS 'COST'                           OVER
BAR                                      OVER
RECAP PROFIT/I5C = R1 - R2;              OVER
" "                                      OVER
RECAP EVAR(1)/I5C = E(3,1) - E(3,2);
AS 'EAST  VARIANCE'                      OVER
RECAP WVAR(3)/I5C = E(3,3) - E(3,4);
AS 'WEST  VARIANCE'
END
```

The output is:

	E_ACTUAL	E_BUDGET	W_ACTUAL	W_BUDGET
SALES	6000.00	4934.00	7222.00	7056.00
COST	4650.00	3760.00	5697.00	5410.00
PROFIT	.00	.00	.00	.00
EAST VARIANCE	.00			
WEST VARIANCE			.00	

Example: Using NOPRINT, Field Reformatting, and COMPUTE With Column Notation

The following request has a field that is not printed, several reformatted fields and three calculated values. With SET CNOTATION=PRINTONLY, the column references result in correct output.

```
SET CNOTATION = PRINTONLY
DEFINE FILE LEDGER
CUR_YR/I5C=AMOUNT;
LAST_YR/I5C=.87*CUR_YR - 142;
NEXT_YR/I5C=1.13*CUR_YR + 222;
END
TABLE FILE LEDGER
SUM NEXT_YR NOPRINT CUR_YR
COMPUTE AMT2/D6 = AMOUNT *2;
LAST_YR/D5   AMOUNT NEXT_YR
COMPUTE AMT3/D6  = AMOUNT*3;
COMPUTE AMT4/D6  = AMOUNT*4;
FOR ACCOUNT
10$$ AS 'CASH'                                    OVER
1100 AS 'ACCTS. REC.'                             OVER
1200 AS 'INVENTORY'                               OVER
BAR                                               OVER
RECAP ATOT/I8C = R1 + R2 + R3; AS 'TOTAL'         OVER
RECAP DIFF(2,10,2)/D8  = ATOT(*) - ATOT(*-1);
END
```

The output is:

	CUR_YR	AMT2	LAST_YR	AMOUNT	NEXT_YR	AMT3	AMT4
CASH	21,239	42,478	17,198	21,239	25,992	63,717	84,956
ACCTS. REC.	18,829	37,658	15,954	18,829	21,941	56,487	75,316
INVENTORY	27,307	54,614	23,329	27,307	31,522	81,921	109,228
TOTAL	67,375	134,750	56,481	67,375	79,455	202,125	269,500
DIFF		67,375		10,894		122,670	

Reference: Usage Notes for SET CNOTATION

- BY fields are not assigned column reference numbers.
- ACROSS fields do have column reference numbers and they will always show.

Creating a Standard Quote-Delimited Character String

How to:

Create a Standard Quote-Delimited Character String

Example:

Creating a Standard Quote-Delimited Character String

Converting User Input to a Standard Quote-Delimited Character String

Using Quote-Delimited Strings With Relational Data Adapters

Reference:

Usage Notes for Quote-Delimited Character Strings

Character strings must be enclosed in single quotation marks to be handled by most database engines. In addition, embedded single quotation marks must be represented by two contiguous single quotation marks. FOCUS, WebFOCUS, and iWay handle character strings that do not follow these rules. However, when accessing a non-FOCUS data source, it is sometimes necessary to impose them.

The QUOTEDSTRING suffix on a Dialogue Manager variable applies the following conversions to the contents of the variable:

- Any single quotation mark embedded within the string is converted to two single quotation marks.
- If the string is enclosed in single quotation marks, they are left as is.
- If the string is not enclosed in single quotation marks, they are added around the string.
- If the string has only an ending quotation mark, as in a plural possessive such as JONES', the existing single quotation mark is doubled and the entire result is enclosed in single quotation marks, yielding 'JONES'''.

Dialogue Manager commands differ in their ability to handle character strings that are not enclosed in single quotation marks but contain embedded blanks. An explicit or implied -PROMPT command can read such a string. The entire input string is then enclosed in single quotation marks when operated on by .QUOTEDSTRING. However, in a -SET command, any string with embedded blanks that is not enclosed in single quotation marks generates an error.

Syntax: How to Create a Standard Quote-Delimited Character String

```
&var.QUOTEDSTRING
```

where:

&var

Is a Dialogue Manager variable.

Example: Creating a Standard Quote-Delimited Character String

The following example shows the results of the QUOTEDSTRING suffix on input strings.

```
-SET &A = ABC;
-SET &B = 'ABC';
-SET &C = O'BRIEN;
-SET &D = 'O'BRIEN';
-SET &E = 'O''BRIEN';
-SET &F = O''BRIEN;
-SET &G = OBRIEN';
-TYPE  ORIGINAL = ABC          QUOTED = &A.QUOTEDSTRING
-TYPE  ORIGINAL = 'ABC'        QUOTED = &B.QUOTEDSTRING
-TYPE  ORIGINAL = O'BRIEN      QUOTED = &C.QUOTEDSTRING
-TYPE  ORIGINAL = 'O'BRIEN'    QUOTED = &D.QUOTEDSTRING
-TYPE  ORIGINAL = 'O''BRIEN'   QUOTED = &E.QUOTEDSTRING
-TYPE  ORIGINAL = O''BRIEN     QUOTED = &F.QUOTEDSTRING
-TYPE  ORIGINAL = OBRIEN'      QUOTED = &G.QUOTEDSTRING
```

The output is:

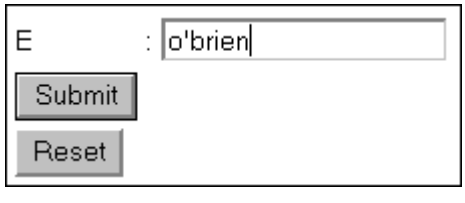
```
ORIGINAL = ABC          QUOTED = 'ABC'
ORIGINAL = 'ABC'        QUOTED = 'ABC'
ORIGINAL = O'BRIEN      QUOTED = 'O''BRIEN'
ORIGINAL = 'O'BRIEN'    QUOTED = 'O''BRIEN'
ORIGINAL = 'O''BRIEN'   QUOTED = 'O''BRIEN'
ORIGINAL = O''BRIEN     QUOTED = 'O''''BRIEN'
ORIGINAL = OBRIEN'      QUOTED = 'OBRIEN'''
```

Example: Converting User Input to a Standard Quote-Delimited Character String

The following -TYPE command accepts quoted or unquoted input and displays quoted output.

```
-TYPE THE QUOTED VALUE IS: &E.QUOTEDSTRING
```

The output is:




```
THE QUOTED VALUE IS: 'o''brien'
```

Example: Using Quote-Delimited Strings With Relational Data Adapters

The following procedure creates an Oracle table named SQLVID from the VIDEOTRK data source.

```
TABLE FILE VIDEOTRK
SUM CUSTID EXPDATE PHONE STREET CITY STATE ZIP
   TRANSDATE PRODCODE TRANSCODE QUANTITY TRANSTOT
BY LASTNAME BY FIRSTNAME
WHERE LASTNAME NE 'NON-MEMBER'
ON TABLE HOLD
END
-RUN
CREATE FILE SQLVID
-RUN
MODIFY FILE SQLVID
FIXFORM FROM HOLD
DATA ON HOLD
END
```

Consider the following SQL Translator request:

```
SET TRACEUSER = ON
SET TRACEON = STMTRACE//CLIENT
SQL
SELECT *
FROM SQLVID WHERE LASTNAME  = &1.QUOTEDSTRING;
END
```

When this request is executed, you must enter a last name, in this case O'BRIEN:

```
PLEASE SUPPLY VALUES REQUESTED

1=

O'BRIEN
```

In the generated SQL request, the character string used for the comparison is correctly enclosed in single quotation marks, and the embedded single quote is doubled:

```
SELECT SQLCOR01.CIN , SQLCOR01.LN , SQLCOR01.FN ,
SQLCOR01.EXDAT , SQLCOR01.TEL , SQLCOR01.STR , SQLCOR01.CITY ,
SQLCOR01.PROV , SQLCOR01.POSTAL_CODE , SQLCOR01.OUTDATE ,
SQLCOR01.PCOD , SQLCOR01.TCOD , SQLCOR01.NO , SQLCOR01.TTOT
FROM SQLVID SQLCOR01  WHERE SQLCOR01.LN  = 'O''BRIEN';
```

The following input variations are translated to the correct form of quoted string demonstrated in the trace.

```
'O'BRIEN'
'O''BRIEN'
```

Any other variation results in:

- A valid string that does not match the database value and does not return any rows. For example, `O''''BRIEN` becomes `'O''''''''BRIEN'` in the WHERE predicate.
- An invalid string that produces one of the following messages:

  Error - Semi-colon or END expected

  Error - Missing or Misplaced quotes

  Error - (value entered) is not a valid column

  Error - Syntax error on line ... Unbalanced quotes

Strings without embedded single quotation marks can be entered without quotes or embedded in single quotation marks, either SMITH or 'SMITH'.

If you use &1 without the QUOTEDSTRING suffix in the request, acceptable input strings that retrieve O'Brien's record are:

```
'''O''''BRIEN'''
'''O''''BRIEN'''
```

Using &1 without the QUITEDSTRING suffix, the acceptable form of a string without embedded single quotation marks is '"SMITH"'.

To make a string enclosed in single quotation marks acceptable without the QUOTEDSTRING suffix, use '&1' in the request. In this case, in order to retrieve O'Brien's record, you must enter the string that would have resulted from the QUOTEDSTRING suffix:

```
'O''''BRIEN'
```

To enter a string without embedded single quotation marks using '&1', you can either omit the surrounding single quotation marks or include them: SMITH or 'SMITH'.

Note: The form '&1.QUOTEDSTRING' is not supported.

Reference: Usage Notes for Quote-Delimited Character Strings

An unmatched single quotation mark at the beginning of a character string is treated as invalid input and generates the following message:

```
(FOC257) MISSING QUOTE MARKS:  value;
```

Producing ANSI-compliant Empty Reports

How to:

Produce ANSI-Compliant Reports With No Records

Example:

Counting Fields With SET EMPTYREPORT=ANSI

Summing Fields With EMPTYREPORT=ANSI

Setting EMPTYREPORT=ON

The EMPTYREPORT=ANSI setting introduces ANSI-compliant handling of reports with zero records, producing a one-line report containing only the specified missing data character. If the request is a COUNT operation, however, a zero is displayed for the missing values.

Syntax: How to Produce ANSI-Compliant Reports With No Records

```
SET EMPTYREPORT={ANSI|ON|OFF}
```

where:

`ANSI`

Produces a single-line report and displays the missing data character or a zero if a COUNT is requested. in each case, &RECORDS will be 0, and &LINES will be 1.

If the SQL Translator is invoked, ANSI automatically replaces OFF as the default setting for EMPTYREPORT.

`ON`

Produces an empty report (column headings with no content).

`OFF`

Produces no report output. OFF is the default value except for SQL Translator requests. When the SQL Translator is invoked, ANSI replaces OFF as the default setting for the EMPTYREPORT parameter, so the results are the same as for the ANSI setting.

The command can also be issued from within a request:

```
ON TABLE SET EMPTYREPORT ANSI
```

Example: Counting Fields With SET EMPTYREPORT=ANSI

```
SET EMPTYREPORT=ANSI
TABLE FILE EMPLOYEE
COUNT CURR_SAL AND DEPARTMENT
WHERE LAST_NAME EQ 'PATRICK'
END
```

The output shows no records and one line, with a zero displayed for CURR_SAL and a period for Department:

```
CURR_SAL DEPARTMENT
       0 0
```

Example: Summing Fields With EMPTYREPORT=ANSI

```
SET EMPTYREPORT=ANSI
TABLE FILE EMPLOYEE
SUM CURR_SAL
IF LAST_NAME EQ 'PATRICK'
END
```

Here is the output. Note that with SUM, the default missing data character (.) is displayed for CURR_SAL.

```
CURR_SAL DEPARTMENT
       0 0
```

Example: Setting EMPTYREPORT=ON

```
SET EMPTYREPORT=ON
TABLE FILE EMPLOYEE
PRINT CURR_SAL AND DEPARTMENT
IF LAST_NAME EQ 'PATRICK'
END
```

With EMPTYREPORT=ON, there are no lines in the report.

```
CURR_SAL DEPARTMENT
       . .
```

Example: Printing Fields and Setting EMPTYREPORT=ANSI in the Request

With PRINT you get one line, with the default missing data character (.) displayed.

```
TABLE FILE EMPLOYEE
PRINT CURR_SAL AND DEPARTMENT
IF DEPARTMENT EQ 'PATRICK'
ON TABLE SET EMPTYREPORT ANSI
END
```

The output is:

```
CURR_SAL DEPARTMENT
-------- ----------
      .  .
```

Using Date System Amper Variables in Master File DEFINEs

Example:

Using the Date Variable &DATE in a Master File DEFINE

Using the Date Variable &YYMD in a Master File DEFINE

Reference:

Messages for Date System Amper Variables in Master File DEFINEs

Master File DEFINE fields can use Dialogue Manager system date variables to capture the system date each time the Master File is parsed for use in a request.

The format of the returned value for each date variable is the format indicated in the variable name. For example, &DATEYYMD returns a date value with format YYYMD. The exceptions are &DATE and &TOD, which return alphanumeric values and must be assigned to a field with an alphanumeric format. The variable names &DATE and &TOD must also be enclosed in single quotation marks in the DEFINE expression.

The variables supported for use in Master File DEFINEs are:

- &DATE
- &TOD
- &DATEMDY
- &DATEDMY
- &DATEYMD
- &DATEMDYY
- &DATEDMYY
- &DATEYYMD
- &DMY
- &YMD
- &MDY
- &YYMD
- &MDYY
- &DMYY

Note that all other reserved amper variables are not supported in Master Files.

Example: Using the Date Variable &DATE in a Master File DEFINE

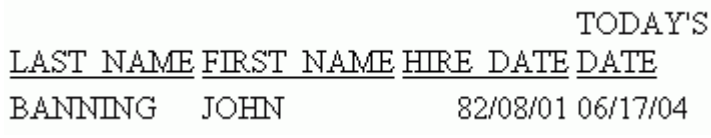
The following version of the EMPLOYEE Master File has the DEFINE field named TDATE added to it. TDATE has format A12 and retrieves the value of &DATE, which returns an alphanumeric value and must be enclosed in single quotation marks:

```
FILENAME=EMPLOYEE, SUFFIX=FOC
SEGNAME=EMPINFO,  SEGTYPE=S1
 FIELDNAME=EMP_ID,        ALIAS=EID,     FORMAT=A9,       $
 FIELDNAME=LAST_NAME,     ALIAS=LN,      FORMAT=A15,      $
 FIELDNAME=FIRST_NAME,    ALIAS=FN,      FORMAT=A10,      $
 FIELDNAME=HIRE_DATE,     ALIAS=HDT,     FORMAT=I6YMD,    $
 FIELDNAME=DEPARTMENT,    ALIAS=DPT,     FORMAT=A10,      $
 FIELDNAME=CURR_SAL,      ALIAS=CSAL,    FORMAT=D12.2M,   $
 FIELDNAME=CURR_JOBCODE, ALIAS=CJC,      FORMAT=A3,       $
 FIELDNAME=ED_HRS,        ALIAS=OJT,     FORMAT=F6.2,     $
DEFINE TDATE/A12   ='&DATE';, $
   .
   .
   .
```

The following request displays the value of TDATE:

```
TABLE FILE EMPLOYEE
PRINT LAST_NAME FIRST_NAME HIRE_DATE TDATE AS 'TODAY''S,DATE'
WHERE LAST_NAME EQ 'BANNING'
END
```

The output is:



LAST_NAME	FIRST_NAME	HIRE_DATE	TODAY'S DATE
BANNING	JOHN	82/08/01	06/17/04

Example: Using the Date Variable &YYMD in a Master File DEFINE

The following version of the EMPLOYEE Master File has the DEFINE field named TDATE added to it. TDATE has format YYMD and retrieves the value of &YYMD:

```
FILENAME=EMPLOYEE, SUFFIX=FOC
SEGNAME=EMPINFO,  SEGTYPE=S1
 FIELDNAME=EMP_ID,        ALIAS=EID,     FORMAT=A9,       $
 FIELDNAME=LAST_NAME,     ALIAS=LN,      FORMAT=A15,      $
 FIELDNAME=FIRST_NAME,    ALIAS=FN,      FORMAT=A10,      $
 FIELDNAME=HIRE_DATE,     ALIAS=HDT,     FORMAT=I6YMD,    $
 FIELDNAME=DEPARTMENT,    ALIAS=DPT,     FORMAT=A10,      $
 FIELDNAME=CURR_SAL,      ALIAS=CSAL,    FORMAT=D12.2M,   $
 FIELDNAME=CURR_JOBCODE, ALIAS=CJC,      FORMAT=A3,       $
 FIELDNAME=ED_HRS,        ALIAS=OJT,     FORMAT=F6.2,     $
DEFINE TDATE/YYMD   = &YYMD ;, $
   .
   .
   .
```

The following request displays the value of TDATE:

```
TABLE FILE EMPLOYEE
PRINT LAST_NAME FIRST_NAME HIRE_DATE TDATE AS 'TODAY''S,DATE'
WHERE LAST_NAME EQ 'BANNING'
END
```

The output is:

LAST_NAME	FIRST_NAME	HIRE_DATE	TODAY'S DATE
BANNING	JOHN	82/08/01	2004/06/17

Reference: Messages for Date System Amper Variables in Master File DEFINEs

The following message appears if an attempt is made to use an unsupported amper variable in a Master File DEFINE:

```
(FOC104)   DEFINE IN MASTER REFERS TO A FIELD OUTSIDE ITS SCOPE: var
```

Creating a Drill Through PDF Compound Report

In this section:

Use With Other Features

Drill Through and Drill Down Compared

Creating a Drill Through PDF Compound Report

How to:

Create a Drill Through in a PDF Compound Report

Specify Drill Through Hyperlinks

Examples:

Creating the Summary Report (Step 1)

Creating the Detail Report (Step 2)

Merging the Summary and Detail Reports Into a PDF Compound Report (Step 3)

Connecting the Reports With Hyperlinks (Step 4)

Reference:

Guidelines on Links For FIRST

Rules For Drill Through Hyperlinks

A common technique in business reporting is to create two related reports:

- **Summary Report.** Contains condensed information for a category such as a business account, with summed data such as total balances and total sales.
- **Detail Report.** For specified fields in the associated summary report, a detail report contains all the component values that contributed to each summary field value.

The Drill Through feature provides a way to easily relate the data in these two types of reports. For example, a user scanning a summary report account may see an unusual figure in one of the accounts, requiring examination of the specific data behind that figure.

The Drill Through feature automates the process of navigating quickly and easily from general to specific information in related reports packaged in a single PDF compound report. Drill Through syntax sets up hyperlinks that take you from an item in a summary report to a corresponding item in a detail report.

The reports linked using Drill Through must follow certain rules. For example, they must contain a corresponding set of fields with the same data type, called the link fields. You must follow certain rules and syntax when constructing Drill Through reports.

Use With Other Features

You can use the Drill Through feature with other WebFOCUS features:

- Compound reports that contain linked Drill Through reports may also contain unrelated reports, before or after the Drill Through reports. For example, you can add to the compound report package a PDF report that contains embedded graphs.
- You can add Drill Down and URL hyperlinks to a PDF report that contains Drill Through hyperlinks.
- Since Drill Through reports are standard PDF compound reports packaged into a single PDF file, you can distribute them using ReportCaster.
- Reports with DRILLTHROUGH syntax can be rendered in all other styled output formats: HTML, PostScript, EXL2K, and so on. In these other formats, the DRILLTHROUGH syntax is ignored. It is useful, for example, to generate a PostScript version of a Drill Through report, which is formatted identically to the PDF version, but which you can send directly to a PostScript printer using ReportCaster or operating system commands.

Drill Through and Drill Down Compared

Using Drill Down, you can construct a summary report in which clicking a hyperlink displays detail data. A Drill Down is implemented dynamically; clicking a hyperlink causes a new report to run. The detail report typically displays only the detail data for a selected field on the summary report.

In contrast, Drill Through reports are static. The Drill Through feature creates a PDF document that contains the summary report plus the detail report, with the detail report containing all the detail data for designated fields in the summary report. Clicking a Drill Through hyperlink navigates internally in the PDF file; no additional reports are run. You can save the PDF file to disk or distribute it via ReportCaster. When opened with Acrobat Reader, it retains its full Drill Through functionality.

Drill Through provides flexibility in the appearance of reports and location of hyperlinks:

- Drill Through hyperlinks may appear in headings, subheadings, and so on, as well as in rows of data.
- You can format the reports using a WebFOCUS StyleSheet.
- You can indicate a hyperlink by color, font, underlining, and so forth.
- You can mix conventional Drill Down hyperlinks freely in the same report with Drill Through hyperlinks.
- The PDF file created with the Drill Through feature can consist of more than two reports.

Procedure: How to Create a Drill Through in a PDF Compound Report

To create a Drill Through in a PDF Compound Report:

1. Create the summary report.
2. Create the detail report.
3. Merge the summary and detail reports into a PDF compound report.
4. Connect the reports with hyperlinks.

Syntax: How to Specify Drill Through Hyperlinks

```
TYPE=type, [element,] [styling_attributes,]
     DRILLTHROUGH={DOWN|FIRST}(link_fields) , $
```

where:

type

Is one of the following StyleSheet types:

- DATA
- HEADING
- FOOTING
- SUBHEAD
- SUBFOOT
- SUBTOTAL
- RECAP

element

Is one or more identifying elements allowed in a WebFOCUS StyleSheet and Drill Through report. An element can describe a specific column (for example, COLUMN=PRODUCT) or heading item (for example, LINE=2, OBJECT=field, ITEM=3).

styling_attributes

Optionally specify the appearance of the hyperlink (for example, COLOR=RED, STYLE=BOLD).

DOWN

Links to the next (the following) report.

FIRST

Links to the first Drill Through report in the sequence.

link_fields

Specifies blank-delimited link field pairs with the following format:

```
T1=S1 T2=S2 T3=S3...
```

T1, T2, and T3 represent column references in the target (linked) report, and S1, S2, and S3 represent column references in the source (current) report. There may be more than three pairs.

A column reference can be the name of a field or any of the other symbols valid in WebFOCUS StyleSheets syntax (for example, Bn, Cn, Pn, Nn, An, subscripted field name, and so on).

The order of the T's on the left of the equal sign and the S's on the right of the equal sign is similar to Drill Down syntax, in which the parameter pairs specify the column reference in the current (source) report on the right and the name of the Dialogue Manager variable in the Drill Down (target) procedure on the left.

If the column reference in the target report is identical to the column reference in the source report, you can use a single column reference, for example, COUNTRY instead of COUNTRY=COUNTRY.

Creating a Drill Through PDF Compound Report

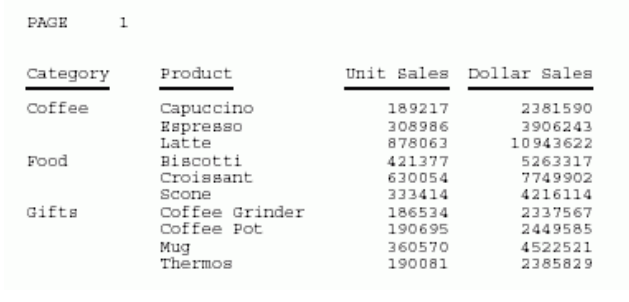
The following examples illustrate how to use Drill Through syntax to navigate between a summary and a detail report. In the process, these reports are merged into a single PDF Compound Report. Their relationship to one another with the use of Drill Through is shown and the location of the Drill Through hyperlinks are specified.

Example: Creating the Summary Report (Step 1)

The following syntax generates a sample summary report:

```
TABLE FILE GGSALES
SUM UNITS DOLLARS BY CATEGORY BY PRODUCT
ON TABLE PCHOLD FORMAT PDF
END
```

The output is:



PAGE 1

Category	Product	Unit Sales	Dollar Sales
Coffee	Capuccino	189217	2381590
	Espresso	308986	3906243
	Latte	878063	10943622
Food	Biscotti	421377	5263317
	Croissant	630054	7749902
	Scone	333414	4216114
Gifts	Coffee Grinder	186534	2337567
	Coffee Pot	190695	2449585
	Mug	360570	4522521
	Thermos	190081	2385829

Example: Creating the Detail Report (Step 2)

The following syntax generates a sample detail report:

```
SET SQUEEZE=ON
TABLE FILE GGSALES
SUM UNITS BUDUNITS DOLLARS BUDDOLLARS
BY CATEGORY NOPRINT BY PRODUCT NOPRINT
ON CATEGORY PAGE-BREAK
HEADING CENTER
"Category: <CATEGORY"
" "
ON PRODUCT SUBHEAD
"**** Product: <PRODUCT"
BY REGION BY CITY
ON TABLE PCHOLD FORMAT PDF
END
```

The first page of the output is:

PAGE 1

Category: Coffee

Region	City	Unit Sales	Budget Units	Dollar Sales	Budget Dollars
**** Product: Capuccino					
Northeast	Boston	15358	15672	174344	192747
	New Haven	12386	11098	158995	141574
	New York	17041	17662	208756	227170
Southeast	Atlanta	27522	29171	352161	384281
	Memphis	21599	23090	274812	287186
	Orlando	24143	23092	317027	285194
West	Los Angeles	23222	22909	306468	281701
	San Francisco	23311	23555	279830	294884
	Seattle	24635	24121	309197	300719
**** Product: Espresso					
Midwest	Chicago	32237	32416	420439	401477
	Houston	36321	36666	455365	439880
	St. Louis	32596	32787	419143	416875
Northeast	Boston	19698	19888	248356	254310
	New Haven	22482	23676	279373	299854
	New York	25947	26212	322378	318738
Southeast	Atlanta	25947	25457	317389	327066
	Memphis	22353	22638	279644	285868
	Orlando	19730	18690	256539	236531
West	Los Angeles	21918	22786	267809	284291
	San Francisco	25729	26030	338270	331313
	Seattle	24028	24111	301538	308337
**** Product: Latte					
Midwest	Chicago	77344	79015	978340	964787
	Houston	76932	77501	938245	941677
	St. Louis	77347	77141	966981	921336
Northeast	Boston	74572	73874	917737	941438
	New Haven	74623	74427	926052	953855
	New York	73671	73411	928026	922776
Southeast	Atlanta	73707	76180	907365	945555
	Memphis	64824	64400	820584	793283
	Orlando	71123	72975	889887	886465
West	Los Angeles	63942	63603	809647	785872
	San Francisco	77461	79035	935862	982579
	Seattle	72517	72634	924896	954267

Example: Merging the Summary and Detail Reports Into a PDF Compound Report (Step 3)

After you create two or more reports to configure as a Drill Through report, the next step is to combine them into a single PDF Compound Report. You can:

- Code the OPEN and CLOSE options on the [PC]HOLD FORMAT PDF command.
- Code the OPEN and CLOSE options on the SET COMPOUND command before the component report syntax.

The Drill Through feature does not support the NOBREAK option, which displays compound reports without intervening page breaks.

This example uses the OPEN and CLOSE options on the PCHOLD FORMAT PDF command:

```
TABLE FILE GGSALES
SUM UNITS DOLLARS BY CATEGORY BY PRODUCT
ON TABLE PCHOLD FORMAT PDF OPEN
END


TABLE FILE GGSALES
SUM UNITS BUDUNITS DOLLARS BUDDOLLARS
BY CATEGORY NOPRINT BY PRODUCT NOPRINT
ON CATEGORY PAGE-BREAK
HEADING CENTER
"Category: <CATEGORY"
" "
ON PRODUCT SUBHEAD
"**** Product: <PRODUCT"
BY CITY
ON TABLE PCHOLD FORMAT PDF CLOSE
END
```

The output on the first page of the merged report shows the totals for Coffee, Food, and Gifts. This output is the result of the first (summary) report in the procedure.

PAGE 1

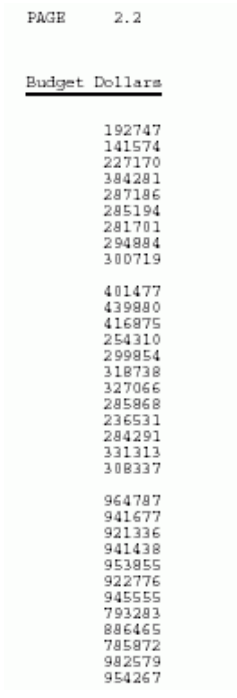
Category	Product	Unit Sales	Dollar Sales
Coffee	Capuccino	189217	2381590
	Espresso	308986	3906243
	Latte	878063	10943622
Food	Biscotti	421377	5263317
	Croissant	630054	7749902
	Scone	333414	4216114
Gifts	Coffee Grinder	186534	2337567
	Coffee Pot	190695	2449585
	Mug	360570	4522521
	Thermos	190081	2385829

The output for Coffee is on the second page of the merged report. It is the result of the second (detail) report in the procedure.

PAGE 2.1

Category: Coffee

Region	City	Unit Sales	Budget Units	Dollar Sales
**** Product: Capuccino				
Northeast	Boston	15358	15672	174344
	New Haven	12386	11098	158995
	New York	17041	17662	208756
Southeast	Atlanta	27522	29171	352161
	Memphis	21599	23090	274812
	Orlando	24143	23092	317027
West	Los Angeles	23222	22909	306468
	San Francisco	23311	23555	279830
	Seattle	24635	24121	309197
**** Product: Espresso				
Midwest	Chicago	32237	32416	420439
	Houston	36321	36666	455365
	St. Louis	32596	32787	419143
Northeast	Boston	19698	19888	248356
	New Haven	22482	23676	279373
	New York	25947	26212	322378
Southeast	Atlanta	25947	25457	317389
	Memphis	22353	22638	279644
	Orlando	19730	18690	256539
West	Los Angeles	21918	22786	267809
	San Francisco	25729	26030	338270
	Seattle	24028	24111	301538
**** Product: Latte				
Midwest	Chicago	77344	79015	978340
	Houston	76932	77501	938245
	St. Louis	77347	77141	966981
Northeast	Boston	74572	73874	917737
	New Haven	74623	74427	926052
	New York	73671	73411	928026
Southeast	Atlanta	73707	76180	907365
	Memphis	64824	64400	820584
	Orlando	71123	72975	889887
West	Los Angeles	63942	63603	809647
	San Francisco	77461	79035	935862
	Seattle	72517	72634	924896



```
PAGE     2.2


Budget Dollars

        192747
        141574
        227170
        384281
        287186
        285194
        281701
        294884
        300719

        401477
        439880
        416875
        254310
        299854
        318738
        327066
        285868
        236531
        284291
        331313
        308337

        964787
        941677
        921336
        941438
        953855
        922776
        945555
        793283
        886465
        785872
        982579
        954267
```

Similarly, the output for Food and Gifts is on page 3.1 and 3.2, and 4.1 and 4.2, respectively.

Example: Connecting the Reports With Hyperlinks (Step 4)

The example illustrates the following:

- When you place a Drill Through hyperlink on a sort-break element, ensure the sort-break is at least at the level of the last sort field participating in the Drill Through. For example, in the second report, the Drill Through hyperlink is on the subheading associated with PRODUCT rather than the heading (with a sort break) associated with CATEGORY.

  Although the code can infer a value of PRODUCT for the CATEGORY heading (you can verify this by embedding the field <PRODUCT> in the heading), it is always the value of the first PRODUCT within that CATEGORY. Typically you want a Drill Through hyperlink for each value of PRODUCT within each CATEGORY.

- You do not need to place the hyperlink on the embedded field PRODUCT as this example does. You can just as effectively place it on the text item **** Product. Any item in this subheading is associated with the same values of CATEGORY and PRODUCT. Similarly, in the first report, you can place the hyperlink on any field in the DATA line, and the values of the associated link fields will be identical. Conventional Drill Down hyperlinks also work this way.

The first report in the merged procedure:

- Places a hyperlink on the PRODUCT field on each DATA line.
- Specifies that the fields to link to the next report are CATEGORY and PRODUCT. Since the target fields in the detail report have identical names in the summary report, you can use the notation CATEGORY rather than CATEGORY=CATEGORY.
- Specifies the action DOWN, so that clicking a hyperlink brings you to the location in the next report that has the corresponding values of the two link fields.
- Uses the default appearance for the hyperlinks, which is blue, underlined text.

The first report is:

```
TABLE FILE GGSALES
SUM UNITS DOLLARS BY CATEGORY BY PRODUCT
ON TABLE PCHOLD FORMAT PDF OPEN
ON TABLE SET STYLE *
TYPE=DATA, COLUMN=PRODUCT, DRILLTHROUGH=DOWN(CATEGORY PRODUCT), $
ENDSTYLE
END
```

The second report in the merged procedure:

- Places a hyperlink in the subheading associated with the link field PRODUCT. Since CATEGORY is a higher level BY field than PRODUCT, each PRODUCT subheading is also associated with a unique value of CATEGORY.
- Places a hyperlink on the second item of the first line of the subheading, which is the embedded field PRODUCT.
- Specifies action FIRST, so that clicking the hyperlink jumps to the line in the first (summary) report that contains the same values of the two link fields CATEGORY and PRODUCT.
- Uses the COLOR attribute to display the hyperlink as red, underlined text.

The second report is:

```
SET SQUEEZE=ON
TABLE FILE GGSALES
SUM UNITS BUDUNITS DOLLARS BUDDOLLARS
BY CATEGORY NOPRINT BY PRODUCT NOPRINT
ON CATEGORY PAGE-BREAK
HEADING CENTER
"Category: <CATEGORY"
" "

ON PRODUCT SUBHEAD
"**** Product: <PRODUCT"
BY REGION BY CITY
ON TABLE PCHOLD FORMAT PDF CLOSE
ON TABLE SET STYLE *
TYPE=SUBHEAD, LINE=1, ITEM=2, DRILLTHROUGH=FIRST(CATEGORY PRODUCT),
COLOR=RED, $
ENDSTYLE
END
```

Category	Product	Unit Sales	Dollar Sales
Coffee	Capuccino	189217	2381590
	Espresso	308986	3906243
	Latte	878063	10943622
Food	Biscotti	421377	5263317
	Croissant	630054	7749902
	Scone	333414	4216114
Gifts	Coffee Grinder	186534	2337567
	Coffee Pot	190695	2449585
	Mug	360570	4522521
	Thermos	190081	2385829

Run the report. On the first page (summary report), click the hyperlink Croissant for the category Food. You jump to that detail information:

Category: Food

Region	City	Unit Sales	Budget Units	Dollar Sales
**** Product: Biscotti				
Midwest	Chicago	29413	30001	378412
	Houston	27504	27074	345238
	St. Louis	29188	28764	368077
Northeast	Boston	47064	48246	570391
	New Haven	46214	46404	589355
	New York	51964	50502	642259
Southeast	Atlanta	43639	44362	555231
	Memphis	35349	34945	438889
	Orlando	40606	41242	511597
West	Los Angeles	20773	19378	266030
	San Francisco	22987	21943	269518
	Seattle	26676	26459	328320
**** Product: Croissant				
Midwest	Chicago	43300	43271	549366
	Houston	46941	47050	587887
	St. Louis	48941	49327	613871
Northeast	Boston	41029	41351	497234
	New Haven	45847	46335	551489
	New York	50518	50178	622095
Southeast	Atlanta	53782	54126	661806
	Memphis	52499	51585	638477
	Orlando	50175	51437	602076
West	Los Angeles	66049	64432	800084
	San Francisco	65214	66025	824457
	Seattle	65759	64872	801060
**** Product: Scone				
Midwest	Chicago	45355	45091	595069
	Houston	33170	32112	418398
	St. Louis	37602	36573	481953
Northeast	Boston	25363	23774	332486
	New Haven	22378	21038	283874
	New York	22991	23603	290811
Southeast	Atlanta	22863	22427	273420
	Memphis	26373	26809	315399
	Orlando	24543	24576	311836
West	Los Angeles	23595	23067	315584
	San Francisco	24093	24094	292839
	Seattle	25088	25091	304445

Now click the hyperlink Croissant to return to the first page (summary report).

Reference: Guidelines on Links For FIRST

The following guidelines apply:

- The set of link fields used with FIRST must correspond to the set of link fields used with DOWN on the first report.
- The action of a FIRST hyperlink in the last report should return to the corresponding line in the first report. The chosen set of links must uniquely identify that line of the first report.
- The DOWN hyperlink on the line of the first report must uniquely identify that line of the first report to locate the matching line of the detail report. The set of links for the DOWN in the first report and the FIRST link in the last report are the same, since they both must uniquely identify a line in the first report.

Reference: Rules For Drill Through Hyperlinks

Reports linked with the Drill Through feature must follow certain rules to ensure that the hyperlinks between them work correctly. The following are key concepts:

- **Source report.** The report from which you are linking. The source report contains hyperlinks to the target report.
- **Target report.** The report to which you are linking.
- **Link field.** One of a set of corresponding fields that exist in both the source and target reports. Link fields locate the position in the target report to which a hyperlink in the source report jumps.

Source and target terminology refer to each pair of linked reports. For example, if there are three reports linked with Drill Through, the second report is generally the target report of the first report, and also the source report of the third report.

To process a report as a Drill Through, you must identify the link fields in the source report that relate to the target report:

- Choose meaningful link fields whose values match in the source and target reports. For example, if a field in the source report contains a part number and a field in the target report contains a Social Security number, the field values will not match and you cannot construct hyperlinks.
- Specify as many link fields as necessary to uniquely locate the position in the target report that corresponds to the link fields in the source report. For example, if the source report is sorted by STATE and CITY, specifying CITY alone as the link field will be problematic if different states contain a city with the same name.
- The link fields in the source and target reports must have the same internal (actual) format: the stopped data type and internal length must be identical. Formatting options, such as number of displayed digits and comma suppression, may differ. For example, an A20 field must link to another A20 field. However, an I6C field may link to an I8 field, since internally both are four-byte fields.
- The link fields must be sort fields or verb objects in both the source and target reports. You can include a NOPRINT (non-display) field, which is useful when constructing a report in which a field is in embedded in heading text.
- Designing Drill Through reports is very similar to designing Drill Down reports. Choosing the link fields for a Drill Through report is similar to choosing the parameter fields in a Drill Down report. Likewise, the syntax of a Drill Through closely parallels the syntax of a Drill Down.
- Since Drill Through reports are linked by corresponding values of link fields, the hyperlinks must appear on report elements associated with a particular value of a link field. However, hyperlinks do not have to appear on any link itself.
- Not all line types are appropriate for placement of a Drill Through hyperlink. For example, if a page break occurs on a BY field that is also a Drill Through link, each page heading is clearly associated with a value in that field. However, if a page break occurs because of page overflow, avoid placing a Drill Through link in a heading. Similarly, subheadings, subfootings, subtotals, and recaps are associated only with the values of particular BY fields.

Excel Table of Contents Feature

How to:

Use the Excel Table of Contents Feature

Example:

Creating a Simple TOC Report

Reference:

How to Name Worksheets

Limitations of TOC Reports

Excel Table of Contents (TOC) is a feature that enables you to generate a multiple worksheet report in which a separate worksheet is generated for each value of the first BY field in the FOCUS report.

Note: This feature can be used only with EXCEL 2002 or higher releases because it requires the Web Archive file format, which was not available in Excel 2000 and earlier releases.

Syntax: How to Use the Excel Table of Contents Feature

The syntax is identical to that of HTML TOC reports, except that only a single BY field is allowed in EXL2K, while multiple BY fields are allowed in HTML.

```
ON TABLE HOLD/PCHOLD FORMAT EXL2K BYTOC
```

Since only one level of TOC is allowed for EXL2K reports, the optional number following the BYTOC keyword can only be 1.

As with HTML, the SET COMPOUND syntax, which precedes the TABLE command, may also be used to specify that a TOC be created:

```
SET COMPOUND=BYTOC
```

Since a TOC report is burst into worksheets according to the value of the first BY field in the report, the report must contain at least one BY field. The bursting field may be a NOPRINT field.

Reference: How to Name Worksheets

- The worksheet tab names are the BY field values that correspond to the data on the current worksheet. If the user specifies the TITLETEXT keyword in the stylesheet, it will be ignored.
- Excel limits the length of worksheet titles to 31 characters. The following special characters cannot be used: ':', '?', '*', and '/'.
- If you want to use date fields as the bursting BY field, you an include the - character instead of the / character. The - character is valid in an Excel tab title. However, if you do use the / character, WebFOCUS will substitute it with the - character.

Reference: Limitations of TOC Reports

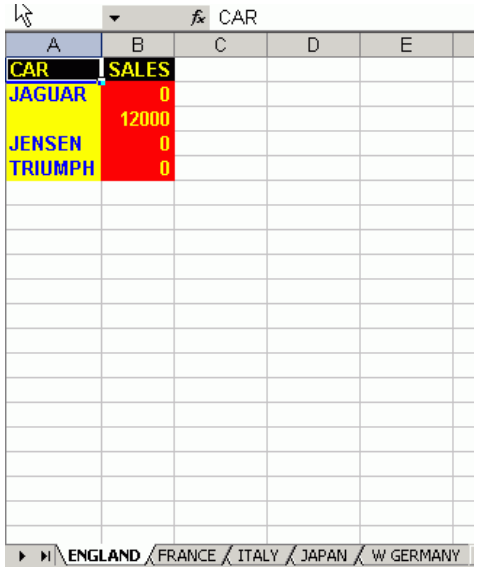
- A TOC report cannot be embedded in a compound report.
- A TOC report cannot not be a pivot table report.

Note: FORMULA is not supported with bursting.

Example: Creating a Simple TOC Report

```
SET COMPOUND=BYTOC
TABLE FILE CAR
PRINT SALES BY COUNTRY NOPRINT BY CAR
ON TABLE PCHOLD FORMAT EXL2K
ON TABLE SET STYLE *
type=report, style=bold, color=yellow, backcolor=black, $
type=data, backcolor=red, $
type=data, column=car, color=blue, backcolor=yellow, $
END
```

The output is:



Excel Compound Reports

Examples:

Creating a Simple Compound Report Using EXL2K

Creating a Compound Report With Pivot Tables and Formulas

Creating a Compound Report Using NOBREAK

Reference:

Guidelines for Using the OPEN, CLOSE, and NOBREAK Keywords and SET COMPOUND

Guidelines for Producing Excel Compound Reports

Excel Compound Reports is a feature which enables you to generate multiple worksheet reports using the EXL2K output format.

The syntax of this feature is identical to that of PDF Compound Reports. By default, each of the component reports from the compound report is placed in a new Excel worksheet (analogous to a new page in PDF). If the NOBREAK keyword is used, the next report follows the current report on the same worksheet (analogous to starting the report on the same page in PDF).

Output, whether sent to the client using PCHOLD or saved in a file using HOLD, is generated in Microsoft's Web Archive format. This format is labeled Single File Web Page in Excel's Save As dialog. Excel provides the conventionally given file suffixes: .mht or .mhtml. WebFOCUS uses the same .xht suffix that is used for EXL2K reports. Since the output is always a single file, it can be easily distributed using ReportCaster.

The components of an Excel compound report can be FORMULA or PIVOT reports (subject to the restrictions). They cannot be Table of Contents (TOC) reports.

For more information, see *Guidelines for Producing Excel Compound Reports* on page 1-54.

Note: Excel 2002 (Office XP) or higher must be installed. This feature will not work with earlier versions of Excel since they do not support the Web Archive file format.

Reference: Guidelines for Using the OPEN, CLOSE, and NOBREAK Keywords and SET COMPOUND

As with PDF, the keywords OPEN, CLOSE, and NOBREAK are used to control Excel compound reports. They can be specified with the HOLD or PCHOLD command or with a separate SET COMPOUND command.

- OPEN is used on the first report of a sequence of component reports to specify that a compound report be produced.
- CLOSE is used to designate the last report in a compound report.
- NOBREAK specifies that the next report be placed on the same worksheet as the current report. If it is not present, the default behavior is to place the next report on a separate worksheet.

  NOBREAK may appear with OPEN on the first report, or alone on a report between the first and last reports. (Using CLOSE is irrelevant, since it refers to the placement of the next report, and no report follows the final report on which CLOSE appears.)
- When used with the HOLD/PCHOLD syntax, the compound report keywords OPEN, CLOSE, and NOBREAK must appear immediately after FORMAT EXL2K, and before any additional keywords, such as FORMULA or PIVOT. For example, you can specify:
  - `ON TABLE PCHOLD FORMAT EXL2K OPEN`
  - `ON TABLE HOLD AS MYHOLD FORMAT EXL2K OPEN NOBREAK`
  - `ON TABLE PCHOLD FORMAT EXL2K NOBREAK FORMULA`
  - `ON TABLE HOLD FORMAT EXL2K CLOSE PIVOT PAGEFIELDS COUNTRY`
- As with PDF compound reports, compound report keywords can be alternatively specified using SET COMPOUND:
  - `SET COMPOUND = OPEN`
  - `SET COMPOUND = 'OPEN NOBREAK'`
  - `SET COMPOUND = NOBREAK`
  - `SET COMPOUND = CLOSE`

Reference: Guidelines for Producing Excel Compound Reports

- **Pivot Tables and NOBREAK.** Pivot Table Reports may appear in compound reports, but they may not be combined with another report on the same worksheet using NOBREAK.
- **Naming of Worksheets.** The default worksheet tab names will be Sheet1, Sheet2, and so on. You have the option to specify a different worksheet tab name by using the TITLETEXT keyword in the stylesheet. For example:

  ```
  TYPE=REPORT, TITLETEXT='Summary Report', $
  ```

  Excel limits the length of worksheet titles to 31 characters. The following special characters cannot be used: ':', '?', '*', and '/'.
- **File Names and Formats.** The output file name (AS name, or HOLD by default) is obtained from the first report of the compound report (the report with the OPEN keyword). Output file names on subsequent reports are ignored.

  The HOLD FORMAT syntax used in the first component report in a compound report applies to all subsequent reports in the compound report, regardless of their format.
- **NOBREAK Behavior.** When NOBREAK is specified, the following report appears on the row immediately after the last row of the report with the NOBREAK. If additional spacing is required between the reports, a FOOTING or an ON TABLE SUBFOOT can be placed on the report with the NOBREAK, or a HEADING or an ON TABLE SUBHEAD can be placed on the following report. This allows the most flexibility, since if blank rows were added by default there would be no way to remove them.

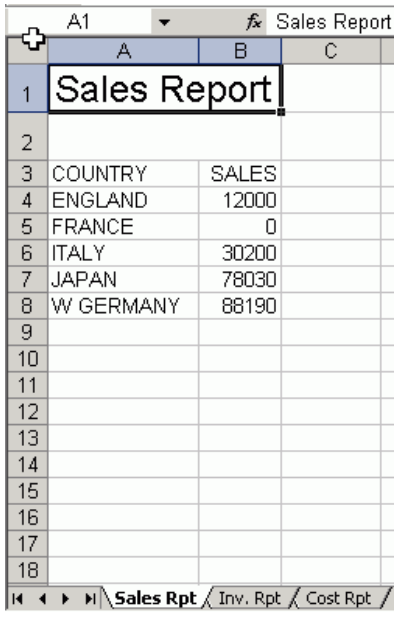
Example: Creating a Simple Compound Report Using EXL2K

```
SET PAGE-NUM=OFF
TABLE FILE CAR
HEADING
"Sales Report"
" "
SUM SALES
BY COUNTRY
ON TABLE SET STYLE *
type=report, titletext='Sales Rpt', $
type=heading, size=18, $
ENDSTYLE
ON TABLE HOLD AS EX1 FORMAT EXL2K OPEN
END

TABLE FILE CAR
HEADING
"Inventory Report"
" "
SUM RC
BY COUNTRY
ON TABLE SET STYLE *
type=heading, size=18, $
ENDSTYLE
ON TABLE HOLD FORMAT EXL2K
END

TABLE FILE CAR
HEADING
"Cost of Goods Sold Report"
" "
SUM DC
BY COUNTRY
ON TABLE SET STYLE *
type=report, titletext='Cost Rpt', $
type=heading, size=18, $
ENDSTYLE
ON TABLE HOLD FORMAT EXL2K CLOSE
END
```

The output for each tab in the Excel worksheet is:

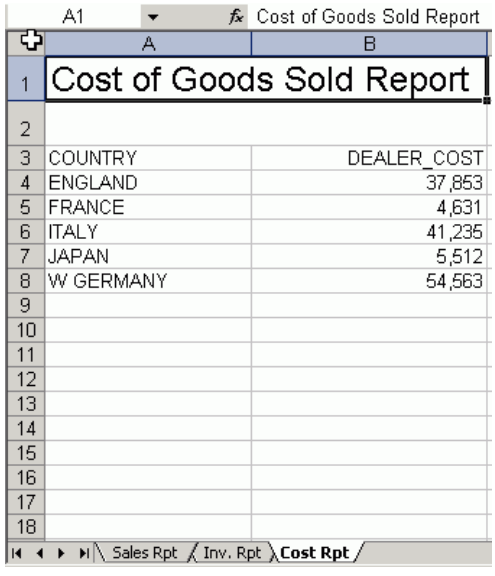


	A	B	C
1	Sales Report		
2			
3	COUNTRY	SALES	
4	ENGLAND	12000	
5	FRANCE	0	
6	ITALY	30200	
7	JAPAN	78030	
8	W GERMANY	88190	
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			

Sales Rpt | Inv. Rpt | Cost Rpt

	A	B	C
1	Inventory Report		
2			
3	COUNTRY	RETAIL_COST	
4	ENGLAND	45,319	
5	FRANCE	5,610	
6	ITALY	51,065	
7	JAPAN	6,478	
8	W GERMANY	64,732	
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			

Sales Rpt | Inv. Rpt | Cost Rpt



A1 Cost of Goods Sold Report

	A	B
1	Cost of Goods Sold Report	
2		
3	COUNTRY	DEALER_COST
4	ENGLAND	37,853
5	FRANCE	4,631
6	ITALY	41,235
7	JAPAN	5,512
8	W GERMANY	54,563
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		

Sales Rpt | Inv. Rpt | **Cost Rpt**

Example: Creating a Compound Report With Pivot Tables and Formulas

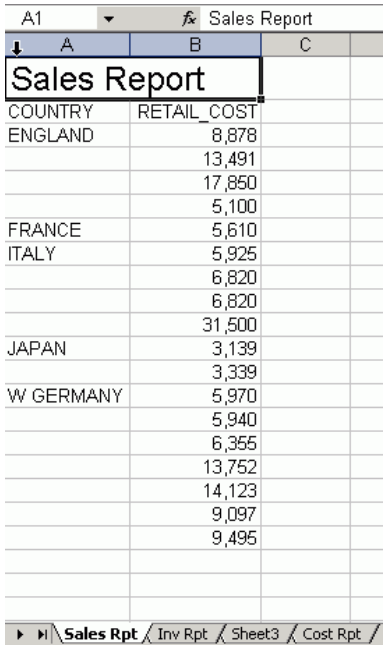
```
SET PAGE-NUM=OFF
TABLE FILE CAR
HEADING
"Sales Report"
" "
PRINT RCOST
BY COUNTRY
ON TABLE SET STYLE *
type=report, titletext='Sales Rpt', $
type=heading, size=18, $
ENDSTYLE
ON TABLE HOLD AS PIV1 FORMAT EXL2K OPEN
END

TABLE FILE CAR
HEADING
"Inventory Report"
" "
PRINT SALES
BY COUNTRY
ON TABLE SET STYLE *
type=heading, size=18, $
ENDSTYLE
ON TABLE HOLD AS PPPP FORMAT EXL2K PIVOT
PAGEFIELDS TYPE SEATS
CACHEFIELDS MODEL MPG RPM
END

TABLE FILE CAR
SUM RCOST
BY COUNTRY BY CAR BY MODEL BY TYPE BY SEATS SUMMARIZE
ON MODEL SUB-TOTAL
ON TABLE HOLD AS XFOCB FORMAT EXL2K FORMULA
END

TABLE FILE CAR
HEADING
"Cost of Goods Sold Report"
" "
PRINT DCOST
BY COUNTRY
ON TABLE SET STYLE *
type=report, titletext='Cost Rpt', $
type=heading, size=18, $
E
NDSTYLE
ON TABLE HOLD AS ONE FORMAT EXL2K CLOSE PIVOT
PAGEFIELDS RCOST
CACHEFIELDS MODEL TYPE SALES ACCEL SEATS
END
```

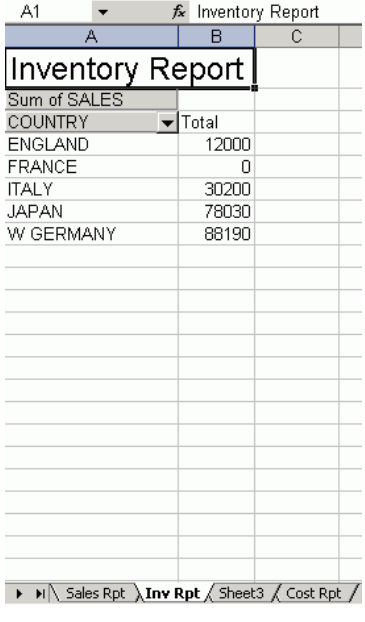
The output for each tab in the Excel worksheet is:



A1 Sales Report

A	B	C
Sales Report		
COUNTRY	RETAIL_COST	
ENGLAND	8,878	
	13,491	
	17,850	
	5,100	
FRANCE	5,610	
ITALY	5,925	
	6,820	
	6,820	
	31,500	
JAPAN	3,139	
	3,339	
W GERMANY	5,970	
	5,940	
	6,355	
	13,752	
	14,123	
	9,097	
	9,495	

Sales Rpt | Inv Rpt | Sheet3 | Cost Rpt



A1 Inventory Report

A	B	C
Inventory Report		
Sum of SALES		
COUNTRY	Total	
ENGLAND	12000	
FRANCE	0	
ITALY	30200	
JAPAN	78030	
W GERMANY	88190	

Sales Rpt | Inv Rpt | Sheet3 | Cost Rpt

	A	B	C	D	E	F	G
1	COUNTRY	CAR	MODEL	BODYTYPE	SEATS	RETAIL_COST	
2	ENGLAND	JAGUAR	V12XKE AUTO	CONVERTIBLE	2	8,878	
3	*TOTAL SEATS 2					8,878	
4	*TOTAL BODYTYPE CONVERTIBLE					8,878	
5	*TOTAL MODEL V12XKE AUTO					8,878	
6			XJ12L AUTO	SEDAN	5	13,491	
7	*TOTAL SEATS 5					13,491	
8	*TOTAL BODYTYPE SEDAN					13,491	
9	*TOTAL MODEL XJ12L AUTO					13,491	
10	*TOTAL CAR JAGUAR					22,369	
11		JENSEN	INTERCEPTOR III	SEDAN	4	17,850	
12	*TOTAL SEATS 4					17,850	
13	*TOTAL BODYTYPE SEDAN					17,850	
14	*TOTAL MODEL INTERCEPTOR III					17,850	
15	*TOTAL CAR JENSEN					17,850	
16		TRIUMPH	TR7	HARDTOP	2	5,100	
17	*TOTAL SEATS 2					5,100	
18	*TOTAL BODYTYPE HARDTOP					5,100	
19	*TOTAL MODEL TR7					5,100	
20	*TOTAL CAR TRIUMPH					5,100	
21	*TOTAL COUNTRY ENGLAND					45,319	
22	FRANCE	PEUGEOT	504 4 DOOR	SEDAN	5	5,610	
23	*TOTAL SEATS 5					5,610	
24	*TOTAL BODYTYPE SEDAN					5,610	

Sales Rpt | Inv Rpt | **Sheet3** | Cost Rpt

A1 fx Cost of Goods Sold Report

	A	B
	Cost of Goods Sold Report	
	Sum of DEALER_COST	
	COUNTRY	Total
	ENGLAND	37,853
	FRANCE	4,631
	ITALY	41,235
	JAPAN	5,512
	W GERMANY	54,563

Sales Rpt | Inv Rpt | Sheet3 | **Cost Rpt**

Example: Creating a Compound Report Using NOBREAK

In this example, the first two reports are on the first worksheet, and the last two reports are on the second worksheet, since NOBREAK appears on both the first and third reports.

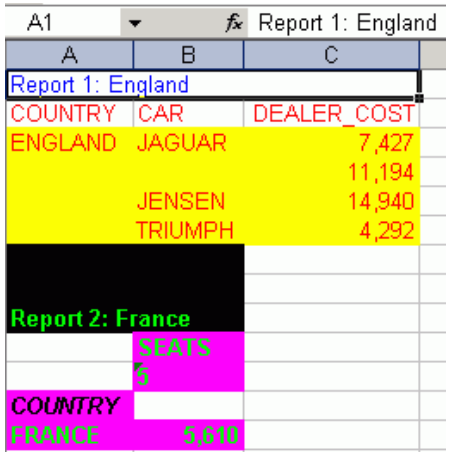
```
TABLE FILE CAR
HEADING
"Report 1: England"
PRINT DCOST BY COUNTRY BY CAR
IF COUNTRY EQ ENGLAND
ON TABLE HOLD FORMAT EXL2K OPEN NOBREAK
ON TABLE SET STYLE *
type=report, color=red, $
type=data, backcolor=yellow, $
type=heading, color=blue, $
END
```

```
TABLE FILE CAR
HEADING
" "
" "
"Report 2: France"
PRINT RCOST BY COUNTRY
IF COUNTRY EQ FRANCE
ACROSS SEATS
ON TABLE PCHOLD FORMAT EXL2K
ON TABLE SET STYLE *
type=report, color=lime, backcolor=fuschia, style=bold, $
type=title, color=black, style=bold+italic, $
type=heading, backcolor=black, $
END
```

```
TABLE FILE CAR
FOOTING
"Report 3 - All"
PRINT SALES BY COUNTRY BY CAR
ON TABLE PCHOLD FORMAT EXL2K NOBREAK
ON TABLE SET STYLE *
type=report, backcolor=yellow, style=bold, $
type=title, color=blue, $
type=footing, backcolor=aqua, $
END
```

```
TABLE FILE CAR
HEADING
" "
" "
"Report 4"
PRINT SALES BY COUNTRY BY CAR
ON TABLE PCHOLD FORMAT EXL2K CLOSE
ON TABLE SET STYLE *
type=report, color=yellow, backcolor=black, style=bold, $
END
```

The output is:



COUNTRY	CAR	SALES
ENGLAND	JAGUAR	0
		12000
	JENSEN	0
	TRIUMPH	0
FRANCE	PEUGEOT	0
ITALY	ALFA ROMEO	4800
		12400
		13000
	MASERATI	0
JAPAN	DATSUN	43000
	TOYOTA	35030
W GERMANY	AUDI	7800
	BMW	8950
		8900
		14000
		18940
		14000
		15600

Report 3 - All

Report 4

COUNTRY	CAR	SALES
ENGLAND	JAGUAR	0
		12000
	JENSEN	0
	TRIUMPH	0
FRANCE	PEUGEOT	0
ITALY	ALFA ROMEO	4800
		12400
		13000
	MASERATI	0
JAPAN	DATSUN	43000
	TOYOTA	35030
W GERMANY	AUDI	7800
	BMW	8950
		8900
		14000
		18940
		14000
		15600

Displaying Multiple Excel Reports Simultaneously

You can view multiple Excel reports (each containing a PCHOLD FORMAT EXL2K command) simultaneously when you are using Microsoft Excel 2002 or 2003. To do this, you need to modify the settings for the redirect and content_disposition attributes in the mime.wfs file.

This enables users to compare the output of multiple Excel spreadsheets simultaneously. By default, a new Excel session opens in a separate window. This behavior may be different for users who expect Excel to start as Web browser plug-in.

Procedure: How to Adjust Settings in the mime.wfs File

1. Open the mime.wfs file in:
   - \ibi\client53\wfc\etc\mime.wfs (WebFOCUS Client)
   - \ibi\srv53\wfs\etc\mime.wfs (Developer Studio)
2. Change the default settings for the *redirect* and *content_disposition* attributes for the .xht and .xls file extensions as follows:

   Default settings:

<!	extension	content_type	format	redirect	translate	content_disposition
<ADDTYPE>	.xht	application/ vnd.ms-excel	ascii	yes	&astran	no
<ADDTYPE>	.xls	application/ vnd.ms-excel	binary	yes	no	no

   New settings (in bold):

<!	extension	content_type	format	redirect	translate	content_disposition
<ADDTYPE>	.xht	application/ vnd.ms-excel	ascii	**no**	&astran	**yes**
<ADDTYPE>	.xls	application/ vnd.ms-excel	binary	**no**	no	**yes**

3. Close and save the mime.wfs file.

JPEG Format Support

How to:

Embed a JPEG Image in a Report Heading

Example:

Creating a Report Heading With an Embedded JPEG Image

In WebFOCUS, JPEG images are supported in PDF, PS, and HTML formats. JPEG images have the same behavior as GIF images. JPEG files can be embedded in the heading or footing or body of a PDF, PS, or HTML report. This is useful when you want to create a single PDF, PS, or HTML report that contains multiple outputs, such as output from a TABLE request and a GRAPH request. You can distribute this type of report using ReportCaster.

Syntax: How to Embed a JPEG Image in a Report Heading

```
TYPE={REPORT|heading}, IMAGE=filename, $
```

where

heading

Has the valid values:

- TABHEADING
- TABFOOTING
- HEADING
- FOOTING
- SUBHEAD
- SUBFOOT

filename

Is the name of the file.

Note:

- httpd:// is not supported in PS, PDF, or HTML.
- IMAGEALIGN, IMAGEBREAK, and ALT are not supported in PS, PDF, or HTML.

Example: Creating a Report Heading With an Embedded JPEG Image

```
TABLE FILE EMPLOYEE
ON TABLE SUBHEAD
"Employee Salary Information and Courses"
" "
" "
" "
" "
" "
" "
" "
" "
" "
PRINT CURR_SAL BY COURSE_NAME
ON TABLE SET PAGE-NUM OFF
ON TABLE SET STYLE *
TYPE=REPORT, GRID=OFF, $
TYPE=TABHEADING, IMAGE=C:\IBI\APPS\IMAGES\Pencils.jpg,
POSITION=(.5 .5), SIZE=(.5 .5), $
ENDSTYLE
END
```

The output is:

EMPLOYEE SALARY INFORMATION AND SKILLS

COURSE_NAME	CURR_SAL
ADVANCED TECHNIQUES	$18,480.00
BASIC REPORT PREP DP MGRS	$27,062.00
BASIC REPORT PREP FOR PROG	$13,200.00
	$18,480.00
BASIC REPORT PREP NON-PROG	$21,780.00
BASIC RPT NON-DP MGRS	$9,500.00
DECISION SUPPORT WORKSHOP	$21,780.00
FILE DESC & MAINT NON-PROG	$21,780.00
FILE DESCRPT & MAINT	$11,000.00
	$13,200.00
	$18,480.00
	$16,100.00
FOCUS INTERNALS	$18,480.00
HOST LANGUAGE INTERFACE	$27,062.00
TIMESHARING WORKSHOP	$21,780.00
WHAT'S NEW IN FOCUS	$21,780.00

Preventing Messages With CREATE FILE

How to:

Issue the CREATE FILE Command With the DROP Option

Example:

Creating a FOCUS Data Source That Already Exists

Creating an Oracle Table That Already Exists

Reference:

Usage Notes for CREATE FILE DROP

The CREATE FILE command creates a data source that conforms to an existing Master File. You can use this command to create a FOCUS, Fusion, XFOCUS, or relational data source.

If you issue the CREATE FILE command when the data source already exists, the following message appears for a FOCUS, Fusion or XFOCUS data source:

```
(FOC441) WARNING. THE FILE EXISTS ALREADY. CREATE WILL WRITE OVER IT
```

For a relational data source, the following messages appear, followed by messages from the Relational engine indicating that the table cannot be created and then by a FOC1414 message:

```
(FOC1400) SQLCODE IS 955 (HEX: 000003BB)
(FOC1421) TABLE EXISTS ALREADY. DROP IT OR USE ANOTHER TABLENAME
```

The DROP option on the CREATE FILE command prevents the display of the messages and creates the data source, dropping the existing table first if necessary and re-parsing the Master File if it changed.

Syntax: How to Issue the CREATE FILE Command With the DROP Option

```
CREATE FILE filename DROP
```

where:

filename

Is the Master File name for a FOCUS, Fusion, XFOCUS, or relational data source.

Example: Creating a FOCUS Data Source That Already Exists

The following CREATE FILE command creates the EMPLOYEE data source, which already exists:

```
create file employee
(FOC441) WARNING. THE FILE EXISTS ALREADY. CREATE WILL WRITE OVER IT

REPLY :
```

If you reply NO, the file is not created. If you reply anything else, the file is created.

The following CREATE FILE command creates the EMPLOYEE data source, which already exists without generating the FOC441 warning or requesting a reply.

```
create file employee drop
 NEW FILE EMPLOYEE  FOCUS   A1 ON 05/12/2004 AT 16.09.14
```

Example: Creating an Oracle Table That Already Exists

The Oracle table name EMPINFO exists therefore, the following CREATE FILE command generates an error and the new version of the table is not created:

```
create file empinfo
(FOC1400) SQLCODE IS 955 (HEX: 000003BB)
(FOC1421) TABLE EXISTS ALREADY. DROP IT OR USE ANOTHER TABLENAME
  : ORA-00955: name is already used by an existing object
  : Erroneous token: EMPINFO
(FOC1414) EXECUTE IMMEDIATE ERROR.
```

The following CREATE FILE command drops the existing table and creates a new version:

```
create file empinfo drop
>
```

The SQLDI trace shows that the original version of the table is dropped and then the new version is created:

```
SET TRACEUSER = ON
SET TRACEOFF = ALL
SET TRACEON = SQLDI//CLIENT
create file empinfo drop

**** orafoc: gfun: 3, fun: 2, cnum: 0
**** orafoc: gfun: 1, fun: 6, cnum: 0
**** Local server assigned for operation
**** OOPEN call
**** OOPEN return
**** acda=008DC0C8,ocnum=1,retcode=0
**** OPARSE call
**** l of sql cmd  20
SQL:  DROP TABLE EMPINFO
**** lngflg value  1
**** OPARSE return
**** acda=008DC0C8,ocnum=1,retcode=0
**** OEXEC call:
**** OEXEC return
**** acda=008DC0C8,ocnum=1,retcode=0
**** orafoc: gfun: 1, fun: 6, cnum: 0
**** Local server assigned for operation
**** OPARSE call
**** l of sql cmd  259
SQL:  CREATE TABLE EMPINFO( "EID" VARCHAR2 (9) NOT NULL ,"LN" VARCHAR2
SQL: (15) NOT NULL ,"FN" VARCHAR2 (10) NOT NULL ,"HDT" DATE  NOT NULL ,"
SQL: DPT" VARCHAR2 (10),"CSAL" DECIMAL(7, 2) NOT NULL ,"CJC" VARCHAR2 (3
SQL: ) NOT NULL ,"OJT" FLOAT ,"BONUS_PLAN" INTEGER  NOT NULL )
**** lngflg value  1
**** OPARSE return
**** acda=008DC0C8,ocnum=1,retcode=0
**** OEXEC call:
**** OEXEC return
```

```
**** acda=008DC0C8,ocnum=1,retcode=0
**** orafoc: gfun: 1, fun: 6, cnum: 0
**** Local server assigned for operation
**** OPARSE call
**** 1 of sql cmd  57
SQL:  CREATE  UNIQUE INDEX EMPINFOIX ON EMPINFO ("EID"  ASC)
**** lngflg value  1
**** OPARSE return
**** acda=008DC0C8,ocnum=1,retcode=0
**** OEXEC call:
**** OEXEC return
**** acda=008DC0C8,ocnum=1,retcode=0
**** orafoc: gfun: 1, fun: 5, cnum: 0
**** OCLOSE call

**** OCLOSE return
**** acda=008DC0C8,ocnum=0,retcode=0
**** OCOM call
**** OCOM return
**** orafoc: gfun: 3, fun: 3, cnum: 0
```

Reference: Usage Notes for CREATE FILE DROP

If you issue the CREATE FILE *filename* DROP command for a FOCUS, Fusion, or XFOCUS data source that has an external index or MDI, you must REBUILD the index after creating the data source.

Preserving Filters With Joins

How to:

Preserve Filter Definitions With KEEPFILTERS

Example:

Preserving Filters With KEEPFILTERS

By default, filters defined on the host data source are cleared by a JOIN command. However, filters can be maintained when a JOIN command is issued, by issuing the SET KEEPFILTERS=ON command.

Setting KEEPFILTERS to ON reinstates filter definitions and their individual declared status after a JOIN command. The set of filters and virtual fields defined prior to each join is called a context (see your documentation on SET KEEPDEFINES and on DEFINE FILE SAVE for information about contexts as they relate to virtual fields). Each new JOIN or DEFINE FILE command creates a new context.

If a new filter is defined after a JOIN command, it cannot have the same name as any previously defined filter unless you issue the FILTER FILE command with the CLEAR option. The CLEAR option clears all filter definitions for that data source in all contexts.

When a JOIN is cleared, each filter definition that was in effect prior to the JOIN command and that was not cleared, is reinstated with its original status. Clearing a join by issuing the JOIN CLEAR join_name command removes all of the contexts and filter definitions that were created after the JOIN join_name command was issued.

Syntax: How to Preserve Filter Definitions With KEEPFILTERS

```
SET KEEPFILTERS = {OFF|ON}
```

where:

OFF
: Does not preserve filters issued prior to a join. This is the default value.

ON
: Preserves filters across joins.

Example: Preserving Filters With KEEPFILTERS

The first filter, UNITPR, is defined prior to issuing any joins, but after setting KEEPFILTERS to ON:

```
SET KEEPFILTERS = ON
FILTER FILE VIDEOTRK
PERUNIT/F5 = TRANSTOT/QUANTITY;
NAME=UNITPR
WHERE PERUNIT GT 2
WHERE LASTNAME LE 'CRUZ'
END
```

The ? FILTER command shows that the filter named UNITPR was created but not activated (activation is indicated by an asterisk in the SET column of the display:

```
? FILTER

SET FILE     FILTER NAME DESCRIPTION
--- -------- ----------- ---------------------------------
    VIDEOTRK UNITPR
```

Next the filter is activated:

```
SET FILTER= UNITPR IN VIDEOTRK ON
```

The ? FILTER query shows that the filter is now activated:

```
? FILTER

SET FILE     FILTER NAME DESCRIPTION
--- -------- ----------- ---------------------------------
*   VIDEOTRK UNITPR
```

The following TABLE request is issued against the filtered data source:

```
TABLE FILE VIDEOTRK
SUM QUANTITY TRANSTOT BY LASTNAME
END
```

The output shows that the TABLE request retrieved only the data that satisfies the UNITPR filter:

```
NUMBER OF RECORDS IN TABLE=        6  LINES=      3
ACCESS LIMITED BY FILTERS

PAUSE.. PLEASE ISSUE CARRIAGE RETURN WHEN READY

LASTNAME         QUANTITY  TRANSTOT
--------         --------  --------
CHANG                   3     31.00
COLE                    2     18.98
CRUZ                    2     16.00
```

Now, the VIDEOTRK data source is joined to the MOVIES data source. The ? FILTER query shows that the join did not clear the UNITPR filter:

```
JOIN MOVIECODE IN VIDEOTRK TO ALL MOVIECODE IN MOVIES AS J1
```

The ? FILTER command shows that the UNITPR filter still exists and is still activated:

```
? FILTER

SET FILE     FILTER NAME DESCRIPTION
--- -------- ----------- --------------------------------
*   VIDEOTRK UNITPR
```

Next a new filter, YEARS1, is created and activated for the join between VIDEOTRK and MOVIES:

```
FILTER FILE VIDEOTRK
YEARS/I5 = (EXPDATE - TRANSDATE)/365;
NAME=YEARS1
WHERE YEARS GT 1
END
SET FILTER= YEARS1 IN VIDEOTRK ON
```

The ? FILTER query shows that both the UNITPR and YEARS1 filters exist and are activated:

```
? FILTER

SET FILE     FILTER NAME DESCRIPTION
--- -------- ----------- --------------------------------
*   VIDEOTRK UNITPR
*   VIDEOTRK YEARS1
```

Now, J1 is cleared. The output of the ? FILTER command shows that the YEARS1 filter that was created after the JOIN command was issued no longer exists. The UNITPR filter created prior to the JOIN command still exists with its original status:

```
JOIN CLEAR J1
? FILTER

SET FILE     FILTER NAME DESCRIPTION
--- -------- ----------- --------------------------------
*   VIDEOTRK UNITPR
```

Preventing Propagation of SUBTOTAL and RECOMPUTE to the Grand Total

How to:

Prevent Propagation of SUBTOTAL and RECOMPUTE to the Grand Total

Example:

Using SET SUMMARYLINES With SUBTOTAL

Using COLUMN-TOTAL With SET SUMMARYLINES=EXPLICIT

Reference:

Usage Notes for SET SUMMARYLINES=EXPLICIT

The SET SUMMARYLINES=EXPLICIT command makes the processing of SUBTOTAL, SUB-TOTAL, SUMMARIZE, and RECOMPUTE on the grand total line consistent with how they work for sort field breaks.

When SUBTOTAL and RECOMPUTE are used at a sort break level, they do not propagate to other sort breaks. SUB-TOTAL and SUMMARIZE propagate to all higher level sort breaks.

The grand total can be considered the highest level sort field in a request. However, by default, all of the summary options, not just SUB-TOTAL and SUMMARIZE, propagate to the grand total level.

The SET SUMMARYLINES=EXPLICIT prevents the propagation of SUBTOTAL and RECOMPUTE to the grand total. In addition, if all summary commands in the request specify field lists, only the specified fields are aggregated and displayed on the grand total line.

When SUBTOTAL and RECOMPUTE are the only summary commands used in the request, a grand total line is produced only if it is explicitly specified in the request using the ON TABLE SUBTOTAL/SUB-TOTAL/RECOMPUTE/SUMMARIZE phrase. If the ON TABLE phrase specifies a field list, only those fields are aggregated and displayed.

Note that you can always suppress the grand total line using the ON TABLE NOTOTAL command in the request.

Syntax: How to Prevent Propagation of SUBTOTAL and RECOMPUTE to the Grand Total

```
SET SUMMARYLINES = {OLD|NEW|EXPLICIT}
```

where:

OLD

Propagates all summary operations to the grand total line. Does not allow mixing of fields with and without prefix operators on a summary command when the first field does not have an associated prefix operator. All fields listed in any summary command are populated on all summary lines. OLD is the default value.

NEW

Propagates all summary operations to the grand total line. Uses prefix operator processing for all summary commands (all summary fields without prefix operators are processed as though they had a SUM. operator). Fields listed in a summary command are populated only on summary lines created by that summary command and on summary lines created by propagation of that summary command. Supports display of alphanumeric fields on summary lines.

EXPLICIT

Does not propagate SUBTOTAL and RECOMPUTE to the grand total line. Uses prefix operator processing for all summary commands (all summary fields without prefix operators are processed as though they had a SUM. operator). Fields listed in a summary command are populated only on summary lines created by that summary command and on summary lines created by propagation of that summary command. Supports display of alphanumeric fields on summary lines.

Note: This command is not supported in a request using the ON TABLE SET syntax.

Reference: Usage Notes for SET SUMMARYLINES=EXPLICIT

If COLUMN-TOTAL is specified in the request, all numeric fields are totaled on the grand total line unless the COLUMN-TOTAL phrase lists specific fields. If the COLUMN-TOTAL phrase lists specific fields, those fields and any fields propagated by SUB-TOTAL or SUMMARIZE commands are totaled.

Example: Using SET SUMMARYLINES With SUBTOTAL

The following request using the MOVIES data source has a sort break for CATEGORY that subtotals the COPIES field and a sort break for RATING that subtotals the LISTPR field:

```
SET SUMMARYLINES=OLD
TABLE FILE MOVIES
SUM COPIES LISTPR WHOLESALEPR
BY RATING
BY CATEGORY
WHERE CATEGORY EQ 'CHILDREN'
WHERE RATING   EQ 'G'
ON RATING SUBTOTAL COPIES
ON CATEGORY SUBTOTAL LISTPR
END
```

Running the request with SUMMARYLINES=OLD subtotals both COPIES and LISTPR at every sort break and propagates them to the grand total line:

RATING	CATEGORY	COPIES	LISTPR	WHOLESALEPR
G	CHILDREN	7	101.89	54.49
*TOTAL	CHILDREN	7	101.89	
*TOTAL	G	7	101.89	
TOTAL		7	101.89	

Running the request with SUMMARYLINES=NEW subtotals COPIES only for the RATING sort break and subtotals LISTPR only for the CATEGORY sort break but propagates both to the grand total line:

RATING	CATEGORY	COPIES	LISTPR	WHOLESALEPR
G	CHILDREN	7	101.89	54.49
*TOTAL	CHILDREN		101.89	
*TOTAL	G	7		
TOTAL		7	101.89	

Running the request with SUMMARYLINES=EXPLICIT subtotals COPIES only for the RATING sort break and subtotals LISTPR only for the CATEGORY sort break. It does not produce a grand total line:

RATING	CATEGORY	COPIES	LISTPR	WHOLESALEPR
G	CHILDREN	7	101.89	54.49
*TOTAL	CHILDREN		101.89	
*TOTAL	G	7		

Adding the phrase ON TABLE SUBTOTAL WHOLESALEPR with SUMMARYLINES=EXPLICIT produces a grand total line with the WHOLESALEPR field subtotaled:

RATING	CATEGORY	COPIES	LISTPR	WHOLESALEPR
G	CHILDREN	7	101.89	54.49
*TOTAL	CHILDREN		101.89	
*TOTAL	G	7		
TOTAL				54.49

Example: Using COLUMN-TOTAL With SET SUMMARYLINES=EXPLICIT

The following request using the MOVIES data source has a sort break for CATEGORY for which subtotals the COPIES field and a sort break for RATING that subtotals the LISTPR field. It also has an ON TABLE COLUMN-TOTAL phrase:

```
SET SUMMARYLINES=EXPLICIT
TABLE FILE MOVIES
SUM COPIES LISTPR WHOLESALEPR
BY RATING
BY CATEGORY
WHERE CATEGORY EQ 'CHILDREN'
WHERE RATING   EQ 'G'
ON RATING SUBTOTAL COPIES
ON CATEGORY SUBTOTAL LISTPR
ON TABLE COLUMN-TOTAL
END
```

The grand total line displays a column total for all numeric columns because of the ON TABLE COLUMN-TOTAL phrase:

RATING	CATEGORY	COPIES	LISTPR	WHOLESALEPR
G	CHILDREN	7	101.89	54.49
*TOTAL	CHILDREN		101.89	
*TOTAL	G	7		
TOTAL		7	101.89	54.49

The following request has an ON TABLE SUBTOTAL WHOLESALEPR command. It also has an ON TABLE COLUMN-TOTAL phrase:

```
SET SUMMARYLINES=EXPLICIT
TABLE FILE MOVIES
SUM COPIES LISTPR WHOLESALEPR
BY RATING
BY CATEGORY
WHERE CATEGORY EQ 'CHILDREN'
WHERE RATING   EQ 'G'
ON RATING SUBTOTAL COPIES
ON CATEGORY SUBTOTAL LISTPR
ON TABLE COLUMN-TOTAL
END
```

The grand total line displays a column total only for the WHOLESALEPR column because of the ON TABLE SUBTOTAL command:

RATING	CATEGORY	COPIES	LISTPR	WHOLESALEPR
G	CHILDREN	7	101.89	54.49
*TOTAL	CHILDREN		101.89	
*TOTAL	G	7		
TOTAL		7	101.89	54.49

Using SUB-TOTAL instead of SUBTOTAL causes COPIES and LISTPR to be aggregated on the grand total line. WHOLESALEPR is totaled because it is listed in the COLUMN-TOTAL phrase. The subtotal for LISTPR propagates to the RATING sort break as well as to the grand total:

```
SET SUMMARYLINES=EXPLICIT
TABLE FILE MOVIES
SUM COPIES LISTPR WHOLESALEPR
BY RATING
BY CATEGORY
WHERE CATEGORY EQ 'CHILDREN'
WHERE RATING   EQ 'G'
ON RATING SUB-TOTAL COPIES
ON CATEGORY SUB-TOTAL LISTPR
ON TABLE COLUMN-TOTAL WHOLESALEPR
END
```

The output is:

RATING	CATEGORY	COPIES	LISTPR	WHOLESALEPR
G	CHILDREN	7	101.89	54.49
*TOTAL	CHILDREN		101.89	
*TOTAL	G	7	101.89	
TOTAL		7	101.89	54.49

Increased Number of Joins

The number of joins that can be in effect at one time for one data source has been raised to 63. The joined structure can have a total of up to 64 segments. The total length of all fields can be up to 32K and the number of fields in a data source can be up to 3072.

For example, you can have 63 joins between 64 one-segment data sources or three joins between four 16-segment data sources, or any combination that does not exceed 64 segments.

If you are using a relational data adapter, the Relational Database Management System (RDBMS) may have its own limit for the number of joins allowed in an SQL statement. If you create a joined structure that exceeds the number of JOINs allowed by the RDBMS but is within the number of JOINs allowed by WebFOCUS, the join is processed by WebFOCUS, but not optimized (passed to the RDBMS for processing).

Raised FML Rows Limit

The limit on FML tag values is now based on available memory rather than on a hardcoded value to service larger FML requests. There is no new syntax and users interact with FML by entering FML requests using an editor or the FML Painter as before.

Error Messages

If it is determined there is no more available memory, an internal routine displays one of the following messages before exiting the product:

```
Reqfor: out of memory
```

This indicates either too many labels or too much memory required.

```
Rectok: out of memory
```

Generated request cannot be parsed because not enough memory.
(This is not an FML-specific message.).

FMLLIST Function: Retrieving an FML Tag List

How to:

Retrieve an FML Tag List

Example:

Retrieving an FML Tag List With FMLLIST

FMLLIST returns a string containing the complete tag list for each row in an FML request. If a row has a single tag value, that value is returned.

The FMLLIST function is supported for COMPUTE but not for DEFINE. Attempts to use it in a DEFINE results in blank values.

Syntax: How to Retrieve an FML Tag List

```
FMLLIST('A4096V')
```

where:

`'A4096V'`

Is the required argument.

Example: Retrieving an FML Tag List With FMLLIST

```
SET FORMULTIPLE=ON
TABLE FILE LEDGER
HEADING
"TEST OF FMLLIST"
" "
SUM AMOUNT
COMPUTE LIST1/A36 = FMLLIST('A4096V');
FOR ACCOUNT
'1010'                  OVER
'1020'                  OVER
'1030'                  OVER
BAR                     OVER
'1030' OR '1020' OR '1010'
END
```

The output is:

```
TEST OF FMLLIST

      AMOUNT LIST1
1010      8,784 1010
1020      4,494 1020
1030      7,961 1030
          ------ ------------------------
1010     21,239 1010 OR 1020 OR 1030
```

FMLFOR Function: Retrieving FML Tag Values

How to:

Retrieve FML Tag Values

Example:

Retrieving FML Tag Values With FMLFOR

FMLFOR retrieves the tag value associated with each row in an FML request. If the FML row was generated as a sum of data records using the OR phrase, FMLFOR returns the first value specified in the list. If the OR phrase was generated by an FML Hierarchy ADD command, FMLFOR returns the tag value associated with the parent specified in the ADD command.

The FMLFOR function is supported for COMPUTE but not for DEFINE. Attempts to use it in DEFINEs will result in blank values.

Syntax: How to Retrieve FML Tag Values

```
FMLFOR(outfield)
```

where:

outfield

Is name of the field that will contain the result, or the format of the output value enclosed in single quotation marks.

Example: Retrieving FML Tag Values With FMLFOR

```
SET FORMULTIPLE = ON
TABLE FILE LEDGER
SUM AMOUNT
COMPUTE RETURNEDFOR/A8 = FMLFOR('A8');
FOR ACCOUNT
1010                    OVER
1020                    OVER
1030                    OVER
BAR                     OVER
1030 OR 1020 OR 1010
END
```

The output is:

	AMOUNT	RETURNEDFOR
1010	8,784	1010
1020	4,494	1020
1030	7,961	1030
1010	21,239	1030

FMLCAP Function: Retrieving FML Hierarchy Captions

The FMLCAP function returns the caption value for each row in an FML hierarchy request. In order to retrieve caption values, the Master File must define an FML hierarchy and the request must use the GET CHILDREN, ADD, or WITH CHILDREN option to retrieve hierarchy data. If the FOR field in the request does not have a caption field defined, FMLCAP returns a blank string.

FMLCAP is supported for COMPUTE but is not recommended for use with DEFINE.

Syntax: How to Retrieve Captions in an FML Request Using the FMLCAP Function

```
FMLCAP(fieldname|'format')
```

where:

fieldname

Is the name of the caption field.

'format'

Is the format of the caption field enclosed in single quotation marks.

Example: Retrieving FML Hierarchy Captions Using FMLCAP

The following request retrieves and aggregates the FML hierarchy that starts with the parent value 2000. FMLCAP retrieves the captions, while the actual account numbers display as the FOR values.

```
SET FORMULTIPLE = ON
TABLE FILE CENTSTMT
SUM ACTUAL_AMT
COMPUTE CAP1/A30= FMLCAP(GL_ACCOUNT_CAPTION);
FOR GL_ACCOUNT
2000 WITH CHILDREN 2 ADD
END
```

The output is:

	Actual	CAP1
2000	313,611,852.	Gross Margin
2100	187,087,470.	Sales Revenue
2200	98,710,368.	Retail Sales
2300	13,798,832.	Mail Order Sales
2400	12,215,780.	Internet Sales
2500	100,885,159.	Cost Of Goods Sold
2600	54,877,250.	Variable Material Costs
2700	6,176,900.	Direct Labor
2800	3,107,742.	Fixed Costs

Increased Limit for MATCH FILE

You could previously merge up to six different data sources or merge data from the same data source up to six times per request. That limit has been raised to 16, allowing you to merge up to 16 data sources in a single MATCH request.

The manner in which MATCH merges the data depends on the request context, or more specifically, the order in which the data sources, BY fields, and display commands are mentioned, as well as on the number of verb objects and BY phrases employed. As before, the following general MATCH conditions apply:

- You can use a total of 32 BY phrases and the maximum normal number of display fields in each MATCH request. You must specify at least one BY field for each file named in the MATCH request.
- DEFINE commands can be used.
- Up to 32 sort sets are supported, including the normal number of common sort fields.
- If used with MATCH, SET HOLDLIST behaves as if HOLDLIST were set to ALL.
- The ACROSS and WHERE TOTAL phrases are not permitted and you cannot use COMPUTE or BY HIGHEST in a MATCH request.

There is no new syntax for this feature.

Reference: Usage Notes for MATCH FILE Limit

The limit of 16 files represents the number of files supported in the most complex MATCH FILE requests. Simpler requests may be able to merge a higher number of files.

Creating Visual Discovery Output Files

How to:

Create a Visual Discovery Output File

Example:

Creating a Visual Discovery Output File

Reference:

Format Conversions for HOLD FORMAT VISDIS

Visual Discovery creates graphs using a tab-delimited data file as input. The first record of the data file contains the column titles for the data values. The next record can contain the Visual Discovery field formats. If this record is not present, Visual Discovery attempts to determine the formats of the data fields by reading the first 50 records from the data file, a process that is not guaranteed to create accurate representations of the WebFOCUS formats.

HOLD FORMAT VISDIS creates a tab-delimited output file with the extension .txt in which the first record has the column titles and the second record contains Visual Discovery formats based on the FOCUS field formats of the data.

Reference: Format Conversions for HOLD FORMAT VISDIS

FOCUS Format	Visual Discovery Format
Integer	I
Decimal/Packed	R
Alphanumeric	S
Date format (smart date)	D%format%format%format (for example, D%Y%M%D). If the year is not a four-digit year, the format returned is S.
Other	S

Syntax: How to Create a Visual Discovery Output File

```
[ON TABLE] HOLD [AS filename ] FORMAT VISDIS
[ON TABLE] PCHOLD [AS filename ] FORMAT VISDIS
[ON TABLE] SAVE [AS filename ] FORMAT VISDIS
```

where:

filename

Is the name of the output file. The file is created with the extension .txt on UNIX and Windows platforms. On VM, the file is created with filetype TXT.

Note: No Master File is created for format VISDIS.

Example: Creating a Visual Discovery Output File

The following request creates a Visual Discovery output file using the MOVIES and VIDEOTRK data sources joined on the MOVIECODE field. The TRANSDATE field does not have four-digit years, so to get a date format in the Visual Discovery output file, a new field named TRANS1 is created from TRANSDATE:

```
JOIN MOVIECODE IN MOVIES TO ALL MOVIECODE IN VIDEOTRK AS J1
DEFINE FILE MOVIES
TRANS1/YYMD = TRANSDATE;
END
TABLE FILE MOVIES
PRINT COPIES TITLE WHOLESALEPR AS 'WHOLESALE,PRICE'
TRANSDATE
BY CATEGORY
WHERE CATEGORY EQ 'ACTION' OR 'CHILDREN'
ON TABLE HOLD FORMAT VISDIS
END
```

The following file is created. For clarity, the tab characters in the file are displayed as a caret (>) surrounded by blanks. Note that the first record has the column titles and the second has the Visual Discovery formats:

```
CATEGORY > COPIES > TITLE > WHOLESALE,PRICE > TRANS1
S > I > S > R > D%Y%M%D
ACTION > 2 > JAWS > 10.99 > 19910627
ACTION > 4 > TOTAL RECALL > 11.99 > 19910619
ACTION > 2 > TOP GUN > 9.99 > 19910626
ACTION > 2 > TOP GUN > 9.99 > 19910627
ACTION > 3 > RAMBO III > 10.99 > 19910621
ACTION > 3 > RAMBO III > 10.99 > 19910626
CHILDREN > 1 > SMURFS, THE > 10.00 > 19910622
CHILDREN > 2 > SHAGGY DOG, THE > 29.99 > 19910625
CHILDREN > 2 > ALICE IN WONDERLAND > 12.50 > 19910617
CHILDREN > 2 > ALICE IN WONDERLAND > 12.50 > 19910622
CHILDREN > 1 > SESAME STREET-BEDTIME STORIES AND SONGS > 7.65 > 19910622
CHILDREN > 1 > SLEEPING BEAUTY > 15.99 > 19910624
CHILDREN > 3 > BAMBI > 12.00 > 19910617
CHILDREN > 3 > BAMBI > 12.00 > 19910622
```

CHAPTER 2

Developer Studio Enhancements

This chapter describes all of the features for Developer Studio in Version 5 Release 3.

Topics:

Creating Reports

- Extended Currency Symbol Support
- SET Commands
- Tab-delimited Output Format
- Minus Edit Display Option
- Multivariate Regression
- NORMSDST and NORMSINV Subroutines
- Execute Wizard
- Graph Enhancements
- Adding Multiple Values With the Variable Editor

Interface and Performance Enhancements

- Security Enhancements in Developer Studio
- Logging Off Areas in WebFOCUS Environments
- Enhanced User Interface
- Performance Enhancements
- Preserved Table Positioning in Graphical Tools
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- Access to the WebFOCUS Administration Console
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Styling Reports With the Resource Layout Painter

- New Formatting and Styling Capabilities in the Resource Layout Painter
- Browser Defaults Displayed in Design Window
- Automatic Population of Fields with Parameter Values
- Sizing a Graph in Resource Layout Painter
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Localized Versions

- French and Japanese Localized Versions

Extended Currency Symbol Support

How to:

Display an Extended Currency Symbol

Example:

Displaying an Extended Currency Symbol

Reference:

Extended Currency Symbol Formats

Information BuildersIn Developer Studio Version 5 Release 3, you can select a currency symbol for display in report output regardless of the default currency symbol configured for National Language Support (NLS). Use the extended currency symbol format in place of the floating dollar (M) or non-floating dollar (N) display option. When you use the floating dollar (M) or non-floating dollar (N) display option, the currency symbol associated with the default code page is displayed. For example, when you use an American English code page, the dollar sign is displayed.

The extended currency symbol format allows you to display a symbol other than the dollar sign. For example, you can display the symbol for a United States dollar, a British pound, a Japanese yen, or the euro. Extended currency symbol support is available for numeric formats (I, D, F, and P). In Developer Studio, you select these formats in the Formats dialog box.

Use the following character combinations as the final two characters in any numeric display format:

Display Option	Description	Example
!d	Fixed dollar sign.	D12.2!d
!D	Floating dollar sign.	D12.2!D
!e	Fixed euro symbol.	F9.2!e
!E	Floating euro symbol.	F9.2!E
!l	Fixed British pound sign.	D12.1!l
!L	Floating British pound sign.	D12.1!L
!y	Fixed Japanese yen symbol.	I9!y
!Y	Floating Japanese yen symbol.	I9!Y

Reference: Extended Currency Symbol Formats

The following guidelines apply:

- A format specification cannot be longer than eight characters.
- The extended currency option must be the last option in the format.
- The extended currency symbol format cannot include the floating (M) or non-floating (N) display option.
- A non-floating currency symbol is displayed only on the first row of a report page. If you use field-based reformatting (as in the example that follows) to display multiple currency symbols in a report column, only the symbol associated with the first row is displayed. In this case, do not use non-floating currency symbols.
- Lower case letters are transmitted as upper case letters by the terminal I/O procedures. Therefore, the fixed extended currency symbols can only be specified in a procedure.
- Extended currency symbol formats can be used with fields in floating point, decimal, packed, and integer formats. Alphanumeric, dynamic, and variable character formats cannot be used.

Procedure: How to Display an Extended Currency Symbol

1. Do one of the following to open the Format dialog box:

   - Click the *Format* button in the Compute, Define, or Recap dialog box.

   or

   - Right-click a selected field in the Report Painter window and select *Format* from the menu.

   The Format dialog box opens.

2. Highlight an extended currency option in the Edit Options list and click *OK*. The currency option will display when you run the report.

Example: Displaying an Extended Currency Symbol

The following example adds a floating euro symbol to a field.

1. Create a new procedure, using CENTORD as the data source.
2. In the Report Painter's main window, add the following fields to your report:
   - DATE
   - PRODNAME
   - QUANTITY
   - PRICE
3. Select the *DATE* field, and click *By*.
4. Click *Where/If*. The Report Options window opens.
5. Enter *QUANTITY GT 700*, and click *OK*.
6. Right-click the *PRICE* field, and select *Format...* from the pop-up menu. The Format dialog box opens.
7. Select *Floating Euro symbol - !E* from the Edit Options scroll list.
8. Click *OK*.

When the report is run, a euro symbol will appear directly to the left of the values in the PRICE field:

Date Of Order:	Product Name:	Quantity:	Price:
2001/10/16	R5 Micro Digital Tape Recorder	726	€89.00
	ZT Digital PDA - Commercial	726	€499.00
2002/03/20	R5 Micro Digital Tape Recorder	751	€89.00
	ZT Digital PDA - Commercial	751	€499.00
2002/04/03	ZC Digital PDA - Standard	751	€299.00
2002/06/07	R5 Micro Digital Tape Recorder	751	€89.00
	ZT Digital PDA - Commercial	751	€499.00
	ZC Digital PDA - Standard	751	€299.00
	R5 Micro Digital Tape Recorder	702	€89.00
	ZT Digital PDA - Commercial	702	€499.00
	ZC Digital PDA - Standard	702	€299.00
2002/06/18	R5 Micro Digital Tape Recorder	751	€89.00
	ZT Digital PDA - Commercial	751	€499.00
2002/10/16	R5 Micro Digital Tape Recorder	798	€89.00
	ZT Digital PDA - Commercial	798	€499.00
2002/12/19	2 Hd VCR LCD Menu	701	€179.00

SET Commands

You can issue a SET command by using the SET tool to generate the command in a stored procedure, or by coding it in a stored procedure. If you use the SET tool, a SET command is generated for the report you are developing. SET commands are fully documented in the *Customizing Your Environment* chapter in the *Developing Reporting Applications* manual. The following SET commands are supported in Developer Studio Version 5, Release 3.

Command	Description
ERROROUT	Terminates a request and returns an error message when an error is encountered.
HNODATA	Controls missing values propagated to a HOLD file.
HOLDMISS	Distinguishes between missing data and default data in a HOLD file.
NULL	Enables creation of a variable-length comma or tab-delimited HOLD file that differentiates between a missing value and a blank string or zero value.
SAVEDMASTERS	Saves a Master File in memory after it is used in a request.

Tab-delimited Output Format

How to:

Select the TABT Format in the Report Painter

The TABT output format creates an output file in tab-delimited format that includes column headings in the first row. This is useful for importing data to Windows-based applications such as MS Access and Excel.

The TABT format includes a built-in safety feature that allows embedded quotation marks within text fields. It inserts a second double quotation mark (") adjacent to the existing one. For example, if you input Joe "Smitty" Smith, the output will be Joe ""Smitty"" Smith. The TABT format also includes the following features:

- The first row contains field names.
- All trailing blanks are stripped from alpha [A*n*] fields.
- All leading blanks are stripped from numeric [D*x.y*, F*x.y*, P*x.y*, and *In*] fields.
- There is a 32K record length limit in the output file.
- A Master File is created when the command used to create the output file is HOLD. The Master File behaves exactly as in FORMAT ALPHA, except for the inclusion of double quotation marks.
- The default file type is .TAB.

Supported output formats are fully documented in *Output File Formats* in the *Saving and Reusing Report Output* chapter in the *Creating Reports With Graphical Tools* manual.

Procedure: How to Select the TABT Format in the Report Painter

1. Choose *Output* from the Report menu. The Report Options dialog box opens at the Output tab.
2. Click the *Hold Data*... button in the Hold/Save section. The Hold dialog box opens.
3. Expand a folder in the Hold Format box to view a list of formats in that category. Categories are: General, Database, Binary Data, Comma Delimited Data, Microsoft Excel, Host To PC transfer, Text Data, Web Document, and XML Output.

   In the Report Painter, the default is *No Hold file*.
4. In the Host to PC transfer folder, highlight the TABT format.

5. In the Name box, type a new name for the HOLD file.

   Tip: This is advisable to avoid having your file overwritten the next time you create a Hold file.

6. Click *OK*. When you run the report, output is saved in a HOLD file. If the selected HOLD format requires an accompanying Master File that file is also created.

Minus Edit Display Option

How to:

Display a Minus Sign After Negative Data

Example:

Displaying a Minus Sign After Negative Data

This option displays a minus sign to the right of negative numeric data. You can define this option in a Master File, in a COMPUTE or DEFINE command, or from the Report Painter.

Minus Edit functions only as a format option.

This edit option is not supported with format options B, E, R, T, DMY, MDY, and YMD. Minus Edit does not perform calculations intended to derive a negative number in the data.

Procedure: How to Display a Minus Sign After Negative Data

1. Do one of the following to open the Format dialog box:

   - Click the *Format* button in the Compute, Define, and Recap dialog box.

   or

   - Right-click a field in the Report Painter window and select *Format* from the menu.

   The Format dialog box opens.

2. Check the box next to the option *Add minus sign if value is negative* and click *OK*. The minus sign displays to the right of negative numeric data when the report is executed.

Example: Displaying a Minus Sign After Negative Data

1. Right-click the Procedures folder, click *New* and then *Procedure*. The Task Viewer opens.
2. Click the diamond-shaped component connector and select *Define*. Create a virtual field using the MOVIES Master File. The Define box opens.
3. In the Field input box, enter *MDISC*. In the Format input box, enter *7.2*. Then, in the expressions window, enter *7.5*. Click *Close*.
4. Click *Yes* at the prompt to save your changes.
5. Click and hold a component connector, and select *Report*. The Report Painter opens.
6. From the Report menu, select *Computes...*. The Report Options dialog box opens with the Computes tab showing.
7. In the Field input box, enter *GROSS_PROFIT*.
8. In the expressions box, enter *LISTPR - WHOLESALPR*, then click *New*.
9. In the Field input box, enter *NET_PROFIT*.
10. In the expressions box, enter *GROSS_PROFIT - MDISC*, then click the *Format* button. The Format dialog box opens.
11. Select the *Add minus sign if value is negative* check box, and click *OK*.
12. In the Report Options window, click *OK*. You return to Report Painter.
13. Add the following fields to the report:
    - *MDISC*
    - *WHOLESALEPR*
    - *LISTPR*
    - *CATEGORY*
14. Select the *CATEGORY* field, and click *By*.
15. Click *Where/If*. The Report Options window opens with the Where/If tab open.
16. Click the *If* tab, and enter the following in the expressions box:

```
IF CATEGORY EQ 'ACTION' OR 'MUSICALS' OR 'DRAMA' OR 'SCI/FI'
```

17. Click *New*.
18. Click *OK*.

When the request is run, the NET_PROFIT field will display a minus sign after any negative values:

CATEGORY	GROSS_PROFIT	NET_PROFIT	MDISC	WHOLESALEPR	LISTPR
ACTION	8.96	1.46	7.50	10.99	19.95
	8.48	.98	7.50	11.50	19.98
	8.00	.50	7.50	11.99	19.99
	4.96	2.54-	7.50	9.99	14.95
	8.96	1.46	7.50	10.99	19.95
DRAMA	9.98	2.48	7.50	10.00	19.98
MUSICALS	5.99	1.51-	7.50	13.99	19.98
	5.99	1.51-	7.50	13.99	19.98
	4.99	2.51-	7.50	9.99	14.98
	14.95	7.45	7.50	15.00	29.95

Multivariate Regression

How to:

Create a Multivariate Linear Regression Column

Example:

Creating a Multivariate Linear Regression Column

Reference:

Usage Notes for REGRESS

You can calculate trends and predict values with multivariate regression. This method derives a linear equation that best fits a set of numeric data points, and uses this equation to create a new column in the report output. The equation can be based on one to three independent variables.

This method estimates values by assuming that the dependent variable (y, the new calculated values) and the independent variables (x1, x2, x3) are related by the following linear equation:

y = a1*x1 [+ a2*x2 [+ a3*x3]] + b

When there is one independent variable, the equation represents a straight line. This produces the same values as FORECAST using the REGRESS method. When there are two independent variables, the equation represents a plane, and with three independent variables, it represents a hyperplane. You should use this technique when you have reason to believe that the dependent variable can be approximated by a linear combination of the independent variables.

REGRESS uses a technique called Ordinary Least Squares to calculate values for the coefficients (a1, a2, a3, and b) that minimize the sum of the squared differences between the data and the resulting line, plane, or hyperplane.

Procedure: How to Create a Multivariate Linear Regression Column

1. In the Report Painter's main window, select a numeric BY field. The *Forecast* button is activated.
2. Click the *Forecast* button.
3. From the Step 1: Choose a Method drop-down list, select the *Multivariate Regression* option.
4. From the Step 2: Choose the First Independent Variable drop-down list, select a variable. You have the option to choose another independent variable in Step 3 and Step 4.
5. From Step 5: Choose the Dependent Variable drop-down list, select a dependent variable.
6. Click *OK*.

Reference: Usage Notes for REGRESS

- The sort field used for REGRESS must be a numeric or smart date field. REGRESS cannot operate on an ACROSS field. If any of the independent variables are also sort fields, they cannot be referenced in the request prior to the REGRESS sort field.
- FORECAST and REGRESS cannot be used in the same request, and only one REGRESS is supported in a request. Non-REGRESS RECAP commands are supported.
- The RECAP command used with REGRESS can contain only the REGRESS syntax. REGRESS does not recognize any syntax after the closing semicolon (;).
- Although you pass parameters to REGRESS using an argument list in parentheses, REGRESS is not a function. It can coexist with a user-written subroutine of the same name, as long as the user-written subroutine is not specified in a RECAP command.

- BY TOTAL is not supported.
- MORE, MATCH, FOR, and OVER are not supported.
- The process of generating the REGRESS values creates extra columns that are not printed in the report output. The number and placement of these additional columns varies depending on the specific request. Therefore, use of column notation is not supported in a request that includes REGRESS.
- SUMMARIZE and RECOMPUTE are not supported for the same sort field used for REGRESS.
- REGRESS is not supported for the FOCUS GRAPH facility.
- The left side of a RECAP command used for REGRESS supports the CURR attribute for creating a currency-denominated field.
- Fields with missing values cannot be used in the regression.

Example: Creating a Multivariate Linear Regression Column

1. Create a new procedure, using GGSALES as the data source.
2. In the Report Painter's main window, add the following fields to your report:
   - DATE
   - BUDUNITS
   - UNITS
   - BUDDOLLARS
   - DOLLARS
3. Select the DATE field, and click the *BY* button. The Forecast button is activated.
4. Click the *Forecast* button. The Forecast window opens.
5. In the Field Name input box, enter *ESTDOLLARS*.
6. From the Step 1: Choose a Method drop-down list, select *Multivariate Regression*.
7. From the Step 2: Choose the First Independent Variable drop-down list, select BUDUNITS.
8. From the Step 3: Choose Another Independent Variable drop-down list, select UNITS.
9. From the Step 4: Choose Another Independent Variable drop-down list, select BUDDOLLARS.
10. From Step 5: Choose the Dependent Variable drop-down list, select DOLLARS.
11. Click *OK*.
12. In the Report Painter, click Where/If. The Report Options window opens.
13. Enter *CATEGORY EQ 'Coffee'* in the calculator window, and click *New*.

14. Enter *REGION EQ 'West'* in the calculator window, and click *New*.
15. Enter *UNITS GT 1600 AND UNITS LT 1700* in the calculator window, and click *New*.
16. Click *OK*.

When the report is run, the forecasted values will display in the ESTDOLLARS column.

NORMSDST and NORMSINV Subroutines

How to:

Use a Function in an Expression With the Define Tool

Use a Function in an Expression With the Where/If or Computes Tab

The NORMSDST and NORMSINV functions perform calculations on a standard normal distribution curve:

- The NORMSDST function calculates the percentage of data values that are less than or equal to a normalized value. A normalized value is a point on the X-axis of a standard normal distribution curve in standard deviations from the mean. This is useful for determining percentiles in normally distributed data.
- The NORMSINV function finds the normalized value that forms the upper boundary of a percentile in a standard normal distribution curve. This function is the inverse of NORMSDST.

The results of NORMSDST and NORMSINV are returned as double-precision and are accurate to six significant digits.

Procedure: How to Use a Function in an Expression With the Define Tool

In the Define tool window:

1. Click the *Functions* button.
2. The Function Arguments dialog box opens. For a list of functions, see the *Using Functions* manual.
3. Select a category from the drop-down list. Categories are: All, Character, Data Source and Decoding, Date and Time, Format Conversion, Numeric, and System.
4. Select a function.
5. Enter any other criteria for the function, such as the value, length, format, etc.
6. Click *OK*. The function and placeholders for its arguments are added to the expression.
7. Repeat steps 3 through 6 for each argument.

Procedure: How to Use a Function in an Expression With the Where/If or Computes Tab

1. In the Report Options Where/If or Computes tab click the *Functions...* button.
2. The Function Arguments dialog box opens. For a list of functions, see the *Using Functions* manual.
3. Select a category from the drop-down list. Categories are: All, Character, Data Source and Decoding, Date and Time, Format Conversion, Numeric, and System.
4. Select a function.
5. Enter any other criteria for the function, such as the value, length, format, etc.
6. Click *OK*. The function and placeholders for its arguments are added to the expression.
7. Repeat steps 3 through 6 for each argument.

Execute Wizard

How to:

Execute a Procedure With the Execute Wizard

Example:

Calling a Procedure From Another Procedure

The Execute component allows one procedure to execute or call another procedure. The redesigned Execute Wizard allows you to view and select available procedures and supply values for parameters in the called procedure and also test that called procedure. The called procedure behaves as a completely separate procedure, with its own context.

Execute Wizard allows you to select the procedure that you are supplying parameter values for. Once this procedure is specified, Execute Wizard displays these parameters and prompts you to provide values for them. You can provide values for all parameters in the procedure, or can choose to provide values for only some of the parameters. If you provide values for only some of the parameters, you must provide values for the other parameters using another method. (For example, values are passed from another part of the application, etc.) After providing parameter values, you can test the called procedure.

The Execute Wizard is available throughout all development areas of the product: Projects, Data Servers, and Managed Reporting. When working against a Managed Reporting environment, the tool allows developers to use Standard Reports available in the Domain or use procedures that reside on the WebFOCUS Reporting Server.

Execute Wizard uses the WFDESCRIBE auto-prompting feature to locate and pass parameters. To activate the WFDESCRIBE feature, change the default value in the IBIF_wfdescribe setting in the cgivars.wfs file.

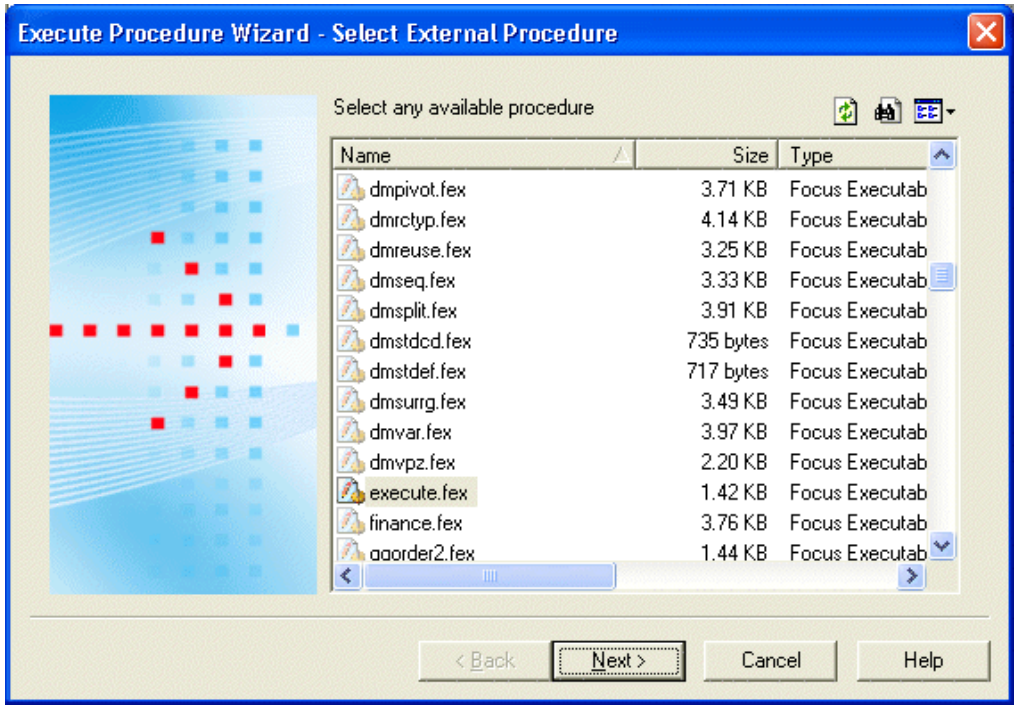
Procedure: How to Execute a Procedure With the Execute Wizard

1. Click the component connector at the point at which you wish to include the existing procedure.

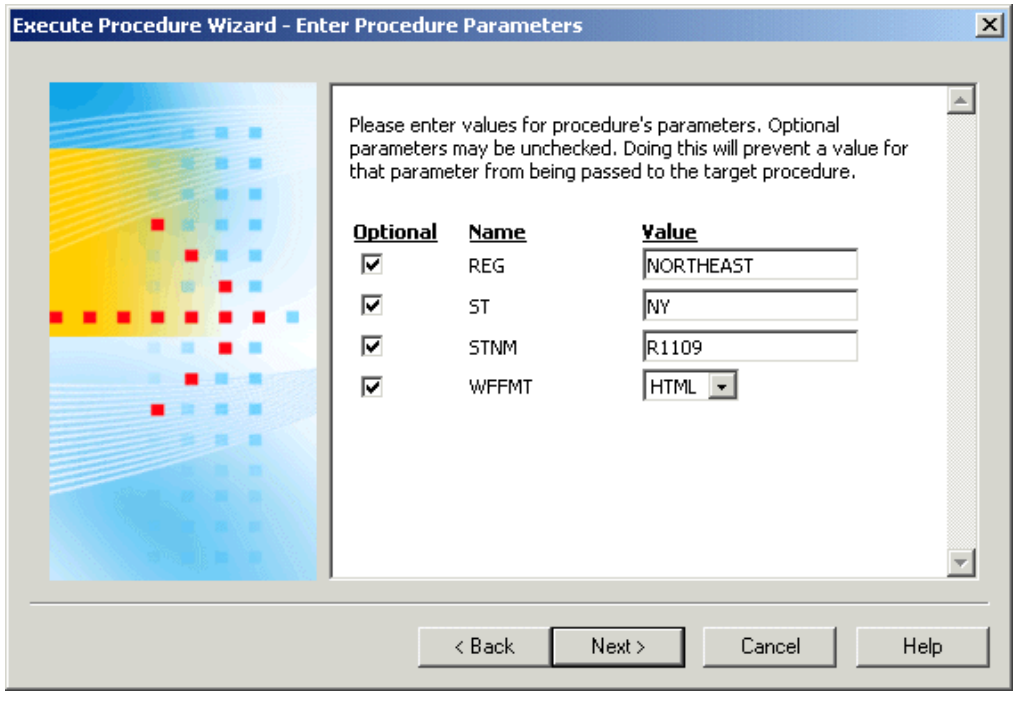
   The Component Connector toolbox opens.

2. Click the *Execute* button.

   The Execute Procedure Wizard opens.


Execute Procedure Wizard - Select External Procedure
Select any available procedure
Name
Size
Type
dmpivot.fex 3.71 KB Focus Executab
dmrctyp.fex 4.14 KB Focus Executab
dmreuse.fex 3.25 KB Focus Executab
dmseq.fex 3.33 KB Focus Executab
dmsplit.fex 3.91 KB Focus Executab
dmstdcd.fex 735 bytes Focus Executab
dmstdef.fex 717 bytes Focus Executab
dmsurrg.fex 3.49 KB Focus Executab
dmvar.fex 3.97 KB Focus Executab
dmvpz.fex 2.20 KB Focus Executab
execute.fex 1.42 KB Focus Executab
finance.fex 3.76 KB Focus Executab
ggorder2.fex 1.44 KB Focus Executab
< Back
Next >
Cancel
Help

3. Select the procedure you want to execute from the list of available procedures, and click Next>. The Execute Procedure Wizard - Enter Procedure Parameters window opens:

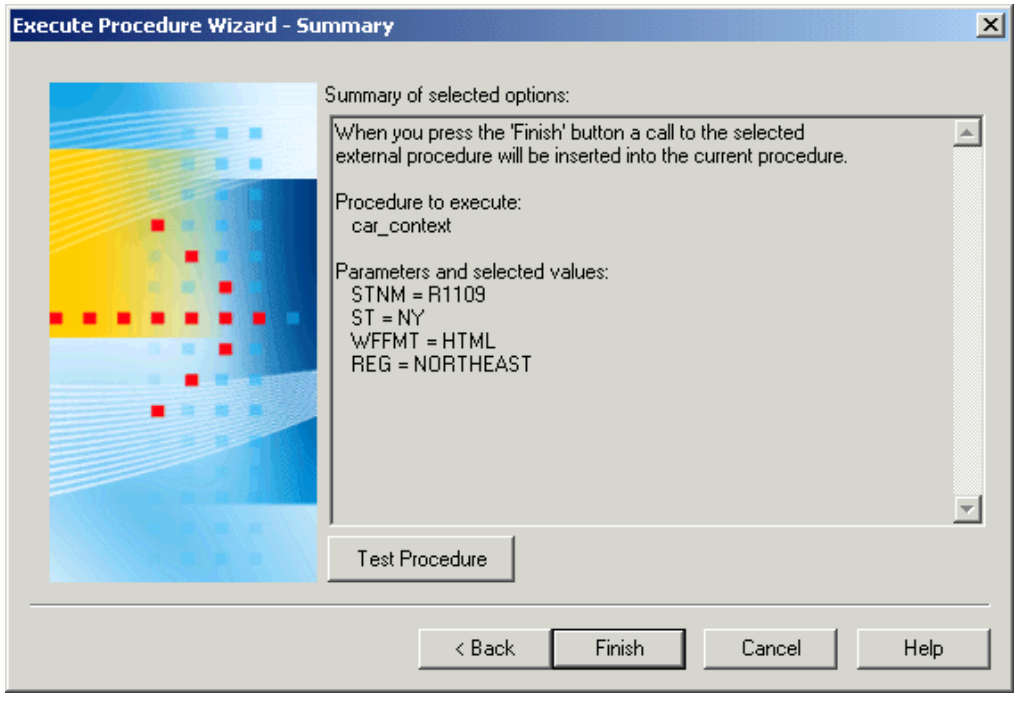


The Enter Procedure Parameters window contains a list of variables contained in the procedure you are executing, and fields in which to enter values for those variables. This screen will not appear if the procedure you are calling does not have parameters.

4. Enter the variable values you wish to use in the procedure you are executing. If you do not wish to provide a value for a variable, uncheck the Optional box next to the variable name.

5. Click *Next*>.

   The Execute Procedure Wizard - Summary window opens. This window allows you to view the name of the procedure you are calling and view the variables-value pairs.



6. Click *Test Procedure* to ensure that the procedure runs properly. If the procedure works properly, a report will display in your browser.

7. Click *Finish* to insert the selected procedure into the current procedure.

Tip: The Execute component inserts the EX command in the procedure's code. Hover your cursor over the Execute object to see the EX command. If you wish to run the embedded procedure, right-click the Execute object and choose Run from the shortcut menu.

Example: Calling a Procedure From Another Procedure

In the following example, you will create two procedures. One procedure, named SALESREP, will contain a sales report with variables. The second procedure, names SVALUES, will contain the values for the variables in SALESREP, and will execute SALESREP. The result will be a sales report with variable values filled in.

Create the SALESREP procedure:

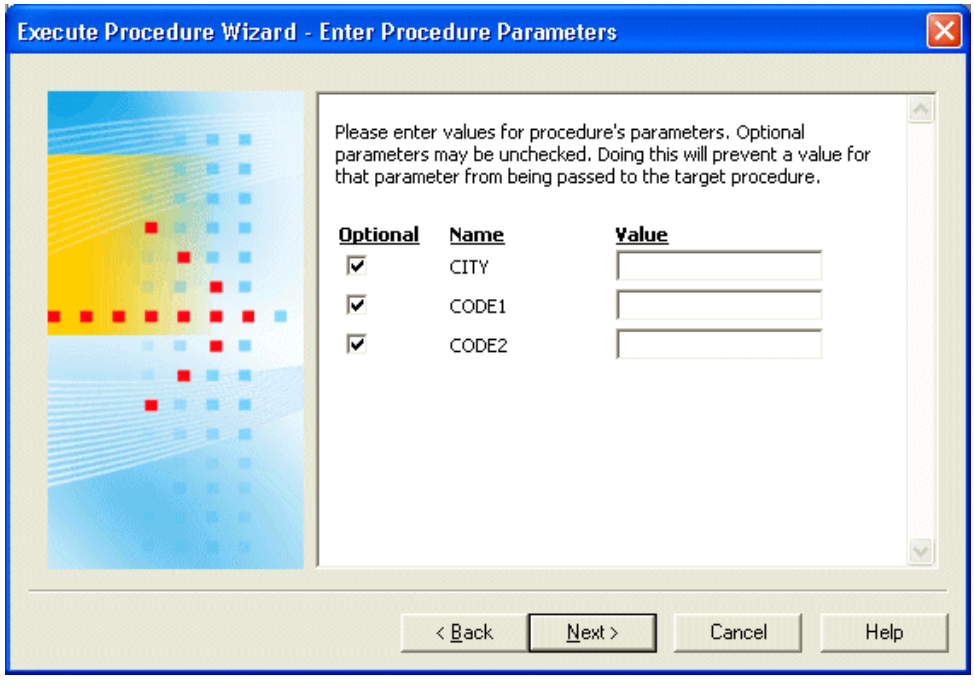
1. Create a new procedure named *SALESREP* using the *SALES* data source.
2. In the Component Connector toolbox, click a component connector, and select *Report*. The Report Painter opens.
3. In the Page Heading section, type *Monthly Report for* and then select *Variable Field* from the *Insert* menu. The Variable Editor opens.
4. Create the &CITY variable by doing the following:
   a. Enter *CITY* in the Name input field.
   b. Select *Single Select* from the Variable Type drop-down list.
   c. Select *Values from field* from the Data Context drop-down list.
   d. Select *CITY* from the Fields from database drop-down list.
   e. Select *ALL* the from Values from field CITY box.
   f. Click *OK*.
5. Add the *UNIT_SOLD* and *RETURNS* fields to your report, then select both fields in the layout and click the *Sum* button in the toolbar.
6. Create the RATIO field by doing the following:
   a. Select *Computes...* from the Report menu. The Report Options window opens.
   b. Enter *RATIO* in the Field input box.
   c. Enter *D5.2* in the Format input box.
   d. Enter *100 * (RETURNS/UNIT_SOLD)* in the Expressions window.
   e. Click *OK*.

7. Add the *PROD_CODE* field to your report, and click *By*.
8. Filter the PROD_CODE field by doing the following:
   a. Select *Where/If...* from the Report menu. The Report Options window opens.
   b. Select the *IF* tab.
   c. Enter the following in the Expressions window: *IF PROD_CODE IS-FROM &CODE1 TO &CODE2*
   d. Click *OK*.
9. Add the *CITY* field to your report, and click *By*.
10. Filter by the CITY field by doing the following:
    a. Select *Where/If...* from the Report menu. The Report Options window opens.
    b. Select the *IF* tab.
    c. Enter the following in the Expressions window: *IF CITY EQ &CITY*
    d. Click *OK*.
11. Save and close the procedure.

Create the SVALUES procedure:

12. Create a new procedure named *SVALUES* and from the Create with drop-down list, select *Procedure Viewer*. The Procedure Viewer opens.
13. Click a component connector, and select *Execute*. The Execute Wizard opens.

14. Select *SALESREP* from the list of procedures, and click *Next*>. The Enter Procedure Parameters window opens.

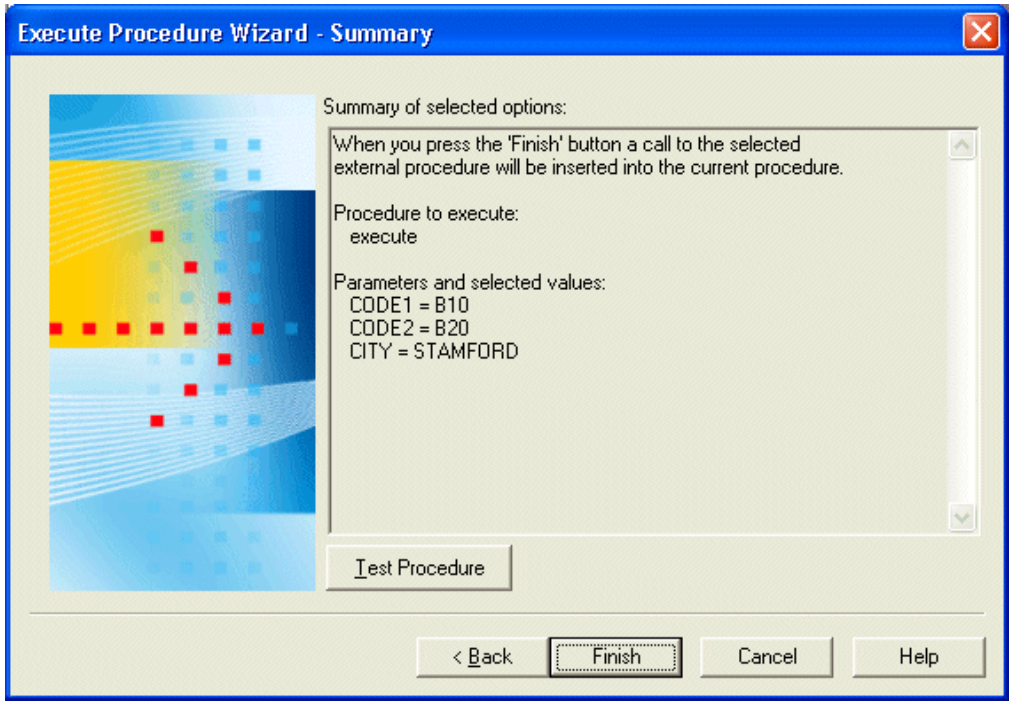

Execute Procedure Wizard - Enter Procedure Parameters
Please enter values for procedure's parameters. Optional parameters may be unchecked. Doing this will prevent a value for that parameter from being passed to the target procedure.
Optional
Name
Value
CITY
CODE1
CODE2
< Back
Next >
Cancel
Help

15. Enter *STAMFORD* in the Value field for CITY.

16. Enter *B10* in the Value field for CODE1.

17. Enter *B20* in the Value field for CODE2.

18. Click *Next*>. The Summary window opens.



19. Click *Finish*. You return to the Component Connector toolbox.

20. Close and save the procedure.

When the SVALUES procedure is run, the following report displays.

MONTHLY REPORT FOR STAMFORD

PROD_CODE	CITY	RETURNS	UNIT_SOLD	RATIO
B10	STAMFORD	10	60	16.67
B12	STAMFORD	3	40	7.50
B17	STAMFORD	2	29	6.90

Graph Enhancements

In this section:

Redesigned Graph Assistant
Graph Assistant: Save Options
Graph Assistant: Selection Criteria Features
Graph Assistant: Styling Specified Fields
Graph Assistant: Auto Arrange Feature
Graph Assistant: Text Rotation
Graph Types and Graph Styles
Graph Display Formats

The following are Developer Studio graph enhancements for Version 5 Release 3.

Redesigned Graph Assistant

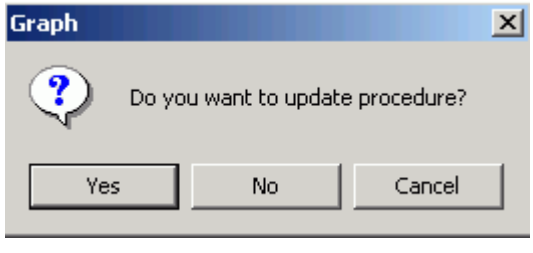
The Graph Assistant looks different, but its functionality has not changed, except as described in the specific features outlined in this topic.

Graph Assistant: Save Options

When you click the Save or Save As buttons you save your report (procedure). If you make changes in your report without subsequently saving them and then click Quit, you are prompted with the following options:

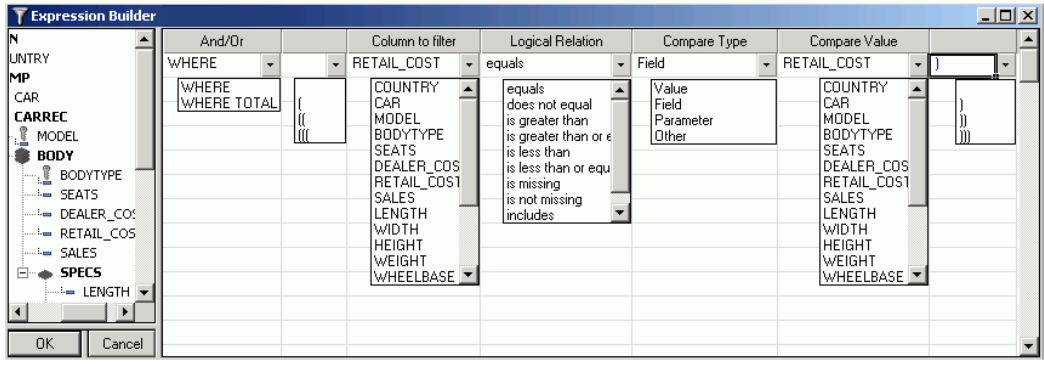
- **Yes.** Click to save your changes and exit the report.
- **No.** Click to discard your changes and exit the report.
- **Cancel.** Click to return to your report to continue working or use Save or Save As to save your changes and then click Quit to exit your report.

The following image shows Save dialog box.



Graph Assistant: Selection Criteria Features

After selecting field values for the X and Y axes, you may wish to limit the data that appears in your graph. You can do this by creating WHERE statements. A WHERE statement limits data by creating parameters the data must satisfy before it is included in the data set. For details on creating WHERE statements, see *Using the Expression Builder* in Appendix B, *Writing Expressions*.



Graph Assistant: Styling Specified Fields

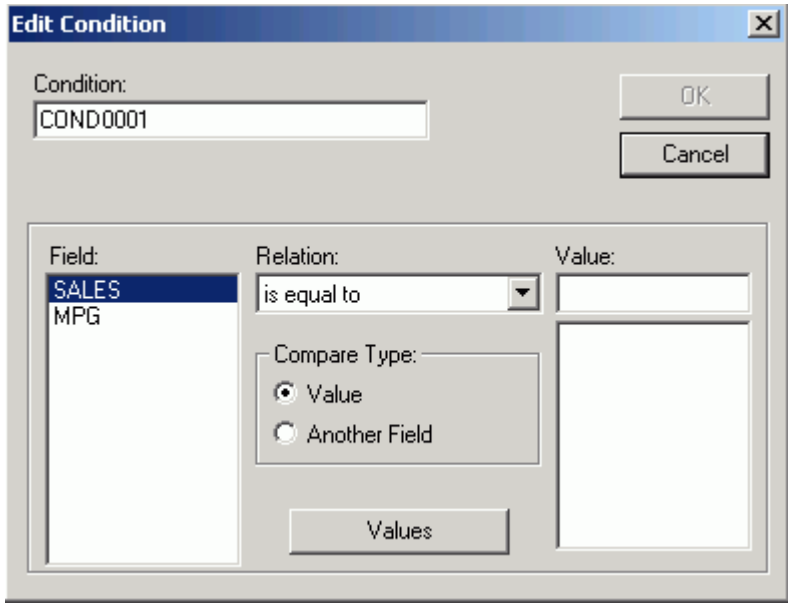
Use the Conditional Styling dialog box to style records based on specified field values. Conditional styling, also referred to as stoplighting, allows you to define conditions that determine when to apply particular fonts, point size, text style, foreground and background color, and drill down procedures to your report's data when the report is run.

You can style specified values for one or several column and sort fields. However, you cannot style values for sort across fields.

Procedure: How to Style Records Based on Specified Field Values

1. In the HTML Graph Assistant, if hidden, Click *Show report field options*.
2. Click the *Display* tab in the report field options section.
3. Click the *Conditional styling* button. The Conditional Styling dialog box opens.

4. Click the *Add* icon that is on the All box. The edit condition dialog box opens where you begin to set the conditional styling.



5. Provide a meaningful and unique file name in the Condition input box.
6. Select a field name from the Field list box and a relation from the Relations list box.
7. To specify a value that completes the relation, first select one of the following in the Compare Type radio button group:
   - *Value*, to compare the selected report field to a data source value or literal value.
   - *Another Field*, to compare the selected report field to the value of another field.
8. If you select Value under Compare Type, perform one of the following to complete the relation:
   - Click *Values* to display existing data source values in the Value list box, and select a value.
   - Type a literal value in the Value input box.
9. Click *OK*. You return to the Conditional Styling dialog box.
10. Select the newly created condition in the list box. The condition statement appears in the When box.
11. Click the *Add* icon on the Attached box.
12. Click *Font*. The Styles dialog box opens.
13. Select the desired font characteristics.

14. Click *OK*. You return to the Conditional Styling dialog box. The specified styling options are reflected in the Text appears as box.
15. Click *OK* to return to the Field selection tab.

Graph Assistant: Auto Arrange Feature

How to:

Arrange the Elements of a Graph Efficiently

Example:

Comparing the Arrangement of the Elements of a Graph

The auto arrange feature enables the Graph Preview to arrange all the elements in a graph report efficiently. The auto arrange feature is checked by default.

Procedure: How to Arrange the Elements of a Graph Efficiently

Check the *Automatic Positioning* option.

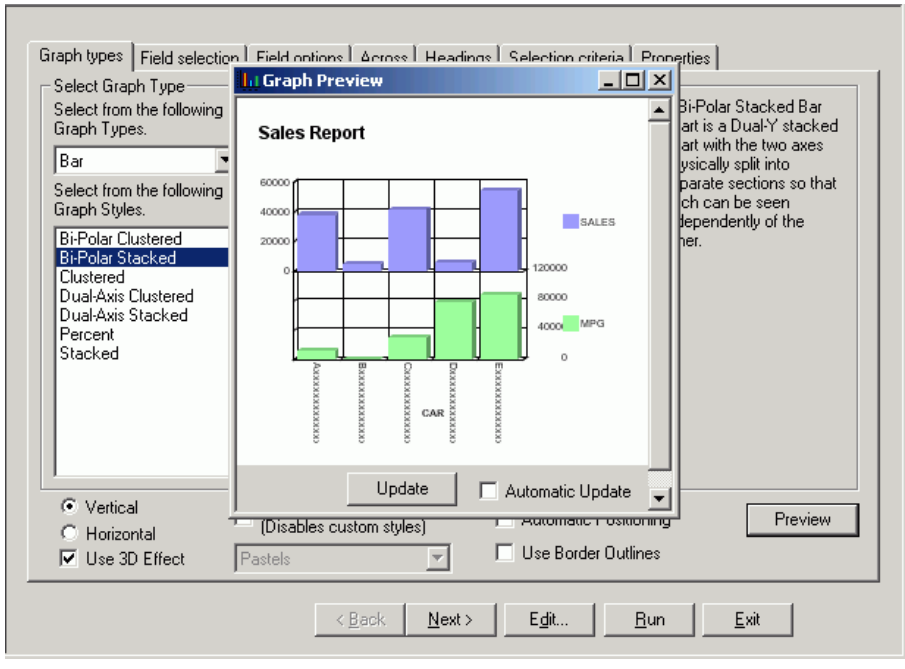
Note: This option is checked by default. If you uncheck this feature, WebFOCUS will arrange the elements.

Example: Comparing the Arrangement of the Elements of a Graph

In the Graph types tab:

1. Uncheck the *Automatic Positioning* option.
2. Click *Show Graph Preview*.

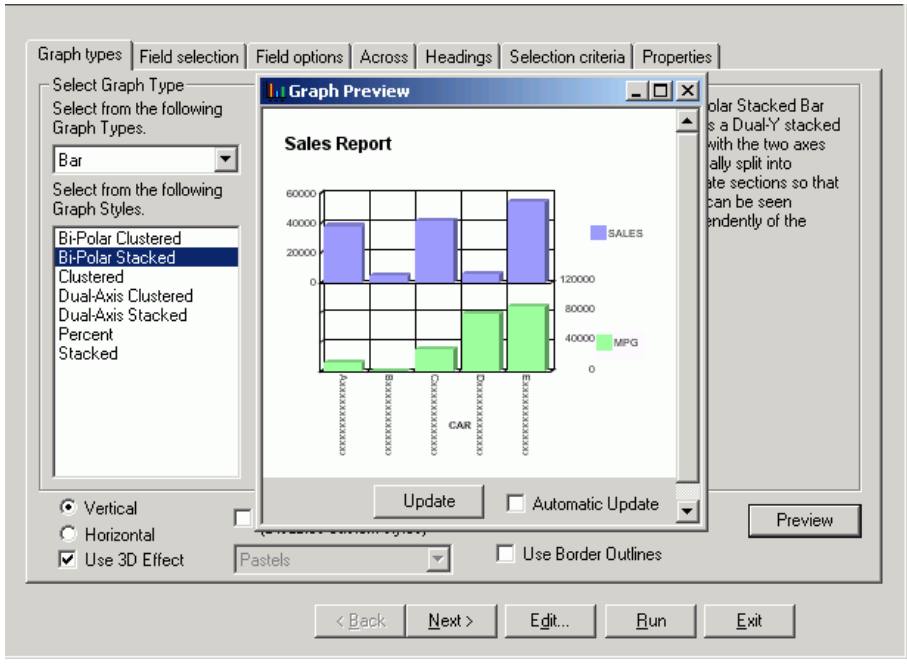
   The Graph preview window opens.



Note how the MPG symbol partially blocks the data along the right Y-axis.

3. Now check the *Automatic Positioning* option.

   A new Graph preview window opens.



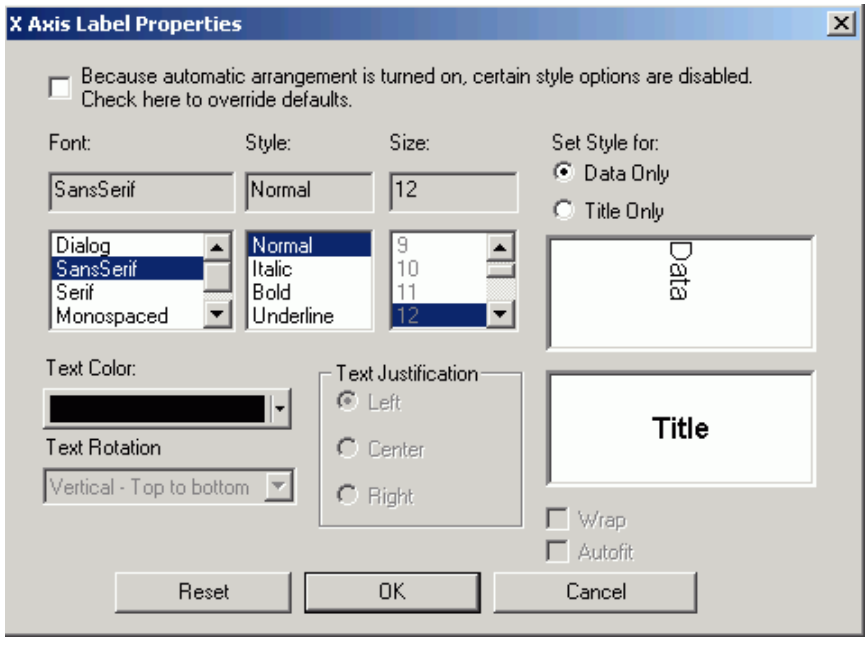
   Note how the Y-axes labels and X-axis labels fit within the size of the report.

Graph Assistant: Text Rotation

A text rotation feature in the X-axis properties dialog enables you to design Data Style labels horizontally, vertically (from top to bottom or from bottom to top), and at a 45-degree angle.

Procedure: How to Arrange X Axis Property Data Styles

1. Click the Properties tab and then the *X axis* tab.
2. Click the *Style labels* button to open the X-axis properties dialog box.
3. To enable the text rotation features, select the check box at the top of the X axis properties dialog box as shown in the following image:



4. Under Text rotation, choose one of the following:

- Horizontal
- Vertical - Bottom to top
- Vertical - Top to bottom
- 45-degree bottom to top

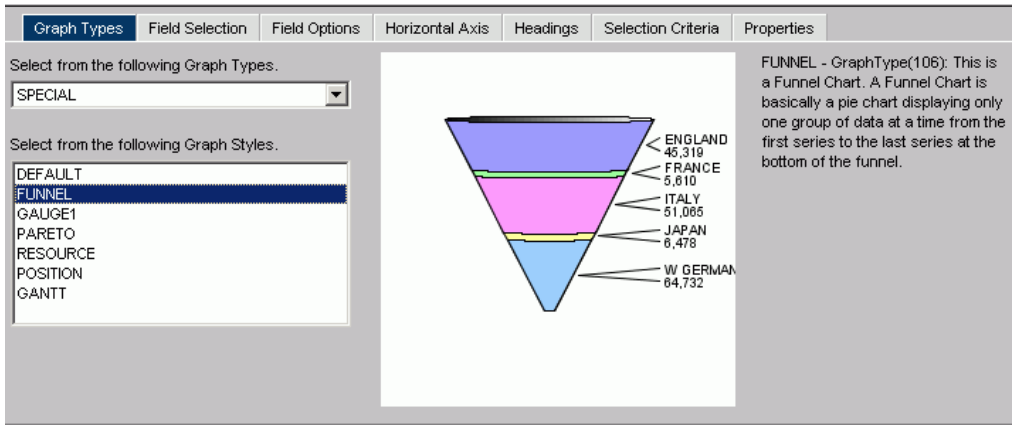
  In this case, 45-degree bottom to top is highlighted. Accordingly, the Data Style label is positioned at a 45-degree angle.

Graph Types and Graph Styles

- **Multi-y.** A Multi-y is a vertical, triple/quadruple/quintuple-Y-axis clustered bar chart. Any series can be assigned to any of the triple/quadruple/quintuple axes.
- **Waterfall.** A Waterfall chart is a cumulative stacked chart. The waterfall chart will automatically perform the cumulative sum when using Subtotal or Total. Waterfall charts essentially require one data value for each series or group marker to be drawn in a chart.
- **Miscellaneous.** The Miscellaneous Graph Type includes a variety of Graph Styles:

- **Default (Spectral).** This is a Spectral Map Chart. This is a chart with row or column matrix of markers that are colored according to data values.
- **Funnel.** A Funnel Chart is basically a pie chart displaying only one group of data at a time from the first series to the last series at the bottom of the funnel.
- **Gauge1.** A Gauge Chart usually indicates the current position of a value within a given spectrum.
- **Pareto.** The X-axis scale is for the group members. The Y-axis scale is the percent of the total accumulation for each selected series.
- **Resource Report.** Resource charts plot X- and Y-axis data cumulatively. They are useful for plotting two independent variables against each other, particularly in cases where one or both of the axes specify percentages and the user wants to examine issues such as capacity utilization.
- **Product Position.** A Product Position chart provides a visual representation of market share and growth versus revenue and measurement (past, present, and future). Product Position charts require a set of three display fields.

The following Miscellaneous Graph Type uses a Funnel Graph Style:



Graph Display Formats

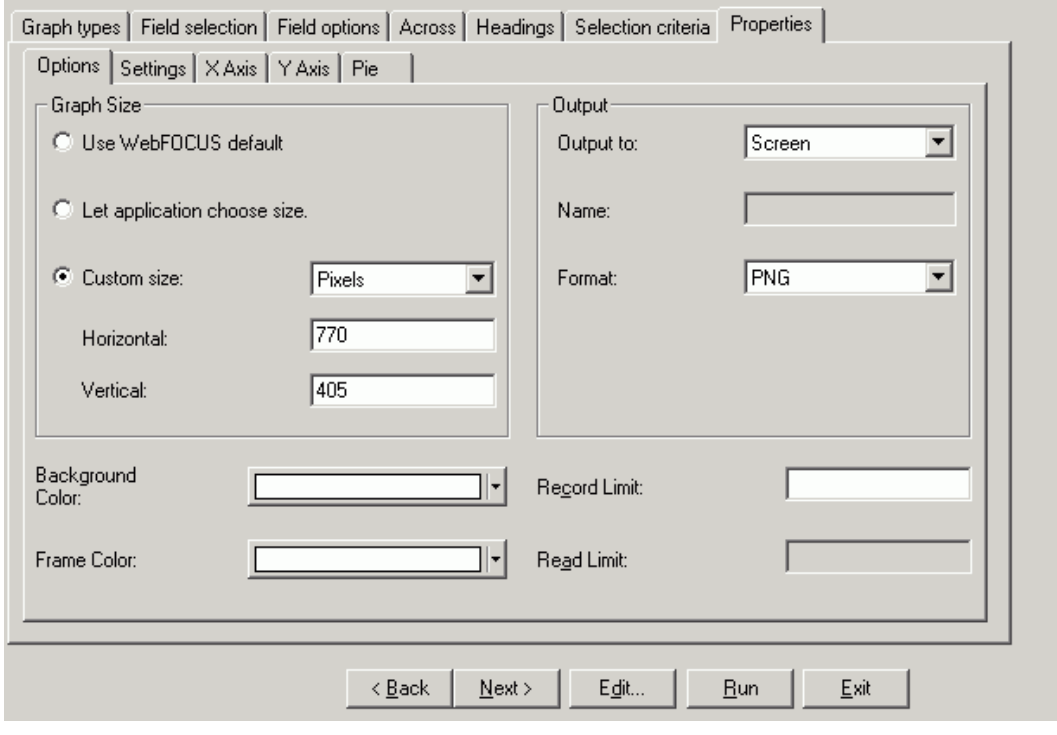
- PNG (Portable Network Graphics). PNG graphs are bit mapped and can support 16 million colors. In addition, PNG graphs have lossless compression (data is decompressed 100% back to the original). Therefore, saving, altering, and resaving a PNG does not degrade its overall quality. The PNG graph displays in the browser.
- GIF (Graphics Interchange Format). GIF compresses well but only supports 256 colors. The GIF graph displays in the browser.

- JPEG (Joint Photographic Experts Group). A compressed file format.
- SVG (Scalable Vector Graphics). SVG is a text-based graph file format that enables Web application developers to design powerful, interactive graphs. SVG is compact and generates high quality images on any media regardless of resolution. The SVG is viewable with an Adobe plug-in.

Reference: Choosing Formats for Output to the Screen, a File, or Printer

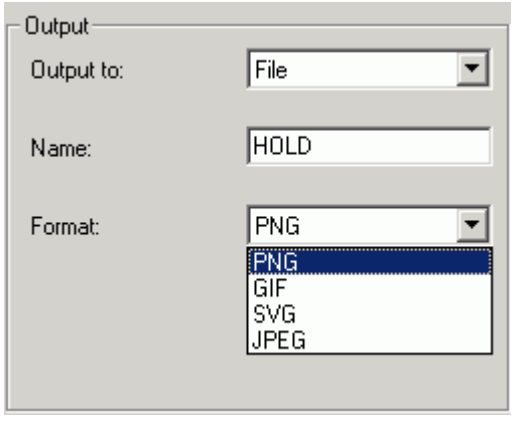
When you create or edit a graph in Graph Assistant, you can choose among these formats in the Output section in the Options tab. If you are designating Output To the Screen, all options listed above are available, as shown in the Format drop-down list.

The following image shows the Options subtab.



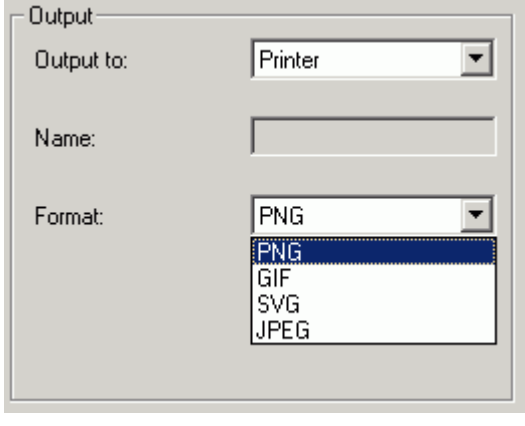
If you are designating Output to File, the PNG, JPEG, GIF, and SVG options are available, as shown in the Format drop-down list.

The following image shows the Output section of the Options subtab with the *Output to File* option selected.



If you are designating Output to a Printer, the PNG, GIF, and SVG options also are available, as shown in the Format drop-down list.

The following image shows the Output section of the Options tab with the *Output to Printer* option selected.



Adding Multiple Values With the Variable Editor

How to:

Add Multiple Values With the Variable Editor

Example:

Adding Multiple Values With the Variable Editor

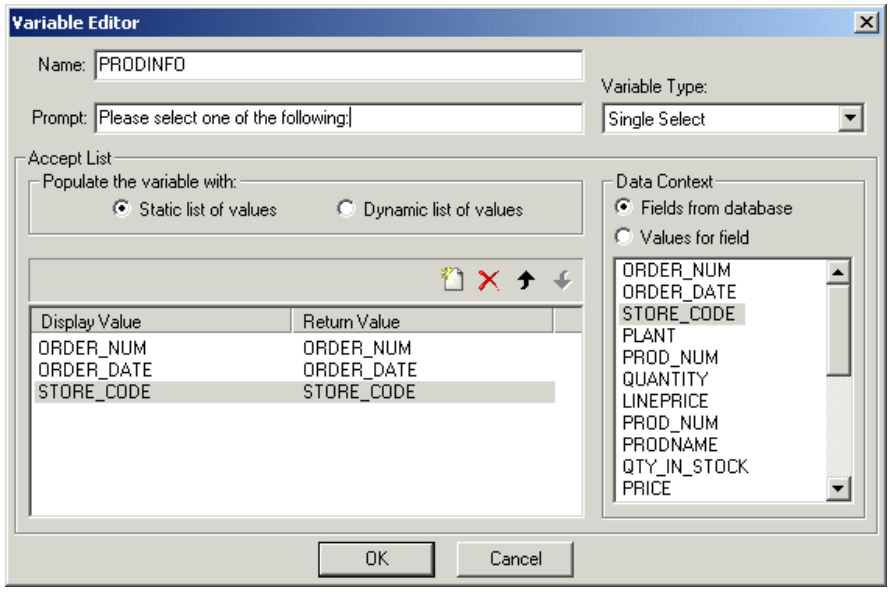
The Variable Editor has been redesigned so that you can enter multiple values without having to open more than one dialog box. It has also been enhanced so you can customize the way you display values.

Procedure: How to Add Multiple Values With the Variable Editor

1. Click inside the Fields tab on the Object Inspector.
2. Right-click a field and select *New Amper Variable Field*.

   The Variable Editor opens.
3. In the Name input box, type a name for the variable. This name will appear as the Column title if the field is added to the report.
4. Optionally, provide text for the message that prompts a user to supply a value for the variable in the Prompt input box.
5. From the Variable Type drop-down list, select *Multiselect AND* or *Multiselect OR*.
6. In the Data Context area, select either *Fields from database* or *Values for field*. The Data Context list displays available values.
7. In the Data Context list, double-click values you want to add to the Accept List table.

8. Click OK. The names of multiple values are automatically added to the display prompt box.



If you want to customize the display of values, simply double-click a value in the Return Value column and type the name as you want it to appear in the output.

Example: Adding Multiple Values With the Variable Editor

1. Create a new procedure, using CENTORD as the data source.
2. In the Report Painter's main window, add the following fields to your report:
   - DATE
   - PROD_NUM
   - PRODNAME
   - PRICE
   - QUANTITY
3. Select the *DATE* field, and click *By*.
4. Click *Where/If*. The Report Options window opens.
5. Click *Assist* in the Where tab to open the Expression Builder.
6. Double-click *PROD_NUM* the list on the left side of the window to add it to the Column to filter column.

7. Click the down arrow in the Logical Relations column, and select *equals* from the drop-down list.
8. Click the down arrow in the Compare Type column and select *Parameter* from the drop-down list.
9. Double-click the Compare Value column. The Variable Editor opens.
10. In the Name input box, enter *ProductNumber*. This name will appear as the Column title if the field is added to the report.
11. Enter *Product Number* in the Prompt input box.
12. From the Variable Type drop-down list, select *Multiselect AND* to add values for fields you want to include in your list of valid values.
13. In the Data Context area, click *Values for field*. The list box displays available values.
14. Double-click *1020* in the list box to add it to the Accept List table. Do the same for the values *1022* and *1024*.
15. Click *OK*.

Security Enhancements in Developer Studio

For details about Developer Studio security enhancements for Version 5 Release 3, see the following topics:

- *Custom Logon Template Support* on page 10-4.
- *Enhanced Support for Netegrity SiteMinder* on page 10-5.
- *Support for RSA ClearTrust* on page 10-5.

Logging Off Areas in WebFOCUS Environments

How to:

Logoff Areas in WebFOCUS Environments

You can logoff and then reconnect using different credentials for the following areas in WebFOCUS Environments (without having to restart Developer Studio):

- The environment name.
- All available Data Server nodes.
- Managed Reporting.

The logoff option functions regardless of whether credentials are stored in the WebFOCUS Environments Properties dialog box or not. It is most useful if credentials are not stored to allow the developer to use different credentials after performing a logoff action. If credentials are stored, required cookies are deleted during the logoff process and stored credentials are reused to establish a new connection.

Procedure: How to Logoff Areas in WebFOCUS Environments

1. Select the WebFOCUS Environments object area.
2. Either right-click the object and select *Logoff* or select *Logoff* from the File menu.

When you select the Logoff option, the following occurs:

- Any open tools are closed and you are prompted to save changes. If you choose not to save changes and click Cancel, the Logoff action is also canceled.
- When tools are closed, any open trees collapse and the following cookies are deleted:
  - At the environment name (client and Web connection):

    WFC_cookie
  - For available Data Server nodes:

    WF_cookie
  - For Managed Reporting:

    MR_cookie

Note:

- For Managed Reporting, a connection to a WebFOCUS Reporting Server is usually required and most likely established. Clearing the MR_cookie will not clear the WebFOCUS Reporting Server cookie since a new connection may need to use the same

WebFOCUS Reporting Server.

- If caching is enabled, cache of remote directory and file information (metadata level caching) is automatically refreshed when you logon, create, delete, or rename applications or files across all areas of the product.
- You do not have to clear file I/O (content) caching. File content caching is performed for individual environments and metadata is refreshed when you log on. If a file is cached and user has access to this file, the cached file will be opened.
- The logoff option is visible only after a connection is established for the selected area.

Enhanced User Interface

Developer Studio's redesigned toolbar buttons provide the product with a more contemporary look. You can also use more standard Windows options, such as dragging and dropping, copying and pasting, and renaming files in place. Object options are more standardized, and common dialog boxes are available throughout the product (for example, File Open, Create New Metadata, and Create New Procedures, etc.) Tools have been reorganized to provide consistency across the features. Icons have a consistent look and common themes that are used throughout all development areas.

Performance Enhancements

In this section:

Local Machine Properties

Various improvements have been implemented in the new release of Developer Studio to improve performance by enabling cache. Improvements apply throughout the product, from all available development areas.

This feature is similar to the way Web pages are stored in a browser's cache directory on the hard disk or memory and speeds up access times, as the requested information is read from the cache memory and is not downloaded from the source.

The number of connections to the WebFOCUS Reporting Server has been minimized. Communication between Developer Studio and the WebFOCUS Client enhances performance because the product does not need to create separate connections for every request to the WebFOCUS Server. In addition, connection to the WebFOCUS Client is not terminated during the Developer Studio session.

Caching has been implemented on the following levels:

Cache Remote Directory and File Information (Metadata Level Caching)

Caching has been implemented in the Developer Studio communication layer in order to keep requests and responses in cache when requests are issued to retrieve information from the Reporting Server, such as:

- Available Reporting Servers, the platform (for instance, Windows, UNIX, and MVS), version and mode of operation (through WebFOCUS Reporting Servers that are APP ENABLEd or while using EDAPATH, also known as Cataloged Path).
- List of applications.
- List of files.
- Components of files (for example, for Master Files: file type, segments, fields, and DEFINE statements).

This feature greatly improves performance, as connections to the Reporting Server are minimized since information returned from the Reporting Server is cached in memory.

A request for the same information does not send a new request to the Reporting Server but instead results in a check for the required information in memory and use of the information if it is available. If information is not available in cache, the request is submitted to the Reporting Server.

This enhancement limits the number of connections to the server, further improves performance while displaying files and launching tools, and uses cached information in all areas (Projects, Data Servers, Managed Reporting, and Web Applications areas) and from all tools of Developer Studio.

Caching is not enabled by default. If you enable caching, it is in effect for the duration of the Developer Studio session.

Cache is cleared for a given request if a task such as logon, create, rename, or delete is performed. A developer can clear/refresh cache on demand if needed.

File Content Caching

This is an additional performance enhancement accomplished by caching file context.

This level of caching stores the contents of FOCUS files (for example, procedures and Master Files) on a developer's PC in a local temporary file.

When you need to access the file again, the product checks to see if the file is available locally, and open its from the local disk if available. If not available, the file is retrieved from the Reporting Server.

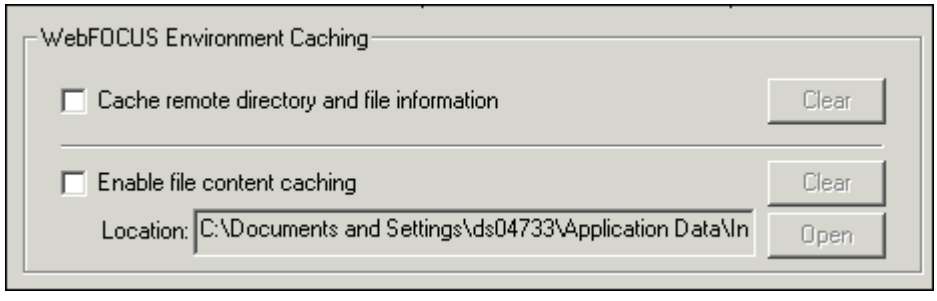
Caching is not enabled by default and is in effect for the duration of the Developer Studio session.

Cache is cleared for a given request if a task such as create, rename, or delete is performed. A developer can clear/refresh cache on demand if needed.

Enhancements on both levels limit the number of connections to the server and further improve performance while displaying files and launching tools.

Local Machine Properties

You can select the *Local Machine* button to indicate whether to cache files when accessing the WebFOCUS environment. These properties are always optional.



In caching, copies of files or information stored on a remote machine are temporarily stored on your local Developer Studio machine. Developer Studio then works with the locally stored files. Caching speeds Developer Studio performance because remote machines are not accessed and queried every time you request information. This is especially useful when accessing mainframes or when a network connection is slow. However, caching should not be used when multiple developers are working with the same files because the possibility exists that you may overwrite each others changes. By default, caching is not enabled.

Two properties are available:

- **Cache remote directory and file information.** This option caches information about files stored on the WebFOCUS environment. This does not actually cache files, only information about them. If selected, Developer Studio does not re-query the WebFOCUS Reporting Server every time it needs a list of files stored on the server.

  Caching for this level is implemented for all development areas (Projects area, Data Servers area, or Managed Reporting area).

- **Enable file content caching.** This option caches files normally stored on the server. Developer Studio only retrieves files once and then when you wish to read or edit them, it uses a cached copy. Be aware that when you edit a cached file, the edited cached file is returned to the server and replaces the actual file on the server.

Developer Studio retrieves information and files the first time you request them and then caches them locally. Developer Studio then uses the cached copies until Developer Studio is restarted or you click the *Clear* buttons for each level. Or you can perform a manual refresh and clear all cache files by clicking *View*, then *Refresh,* or by pressing F5. Refresh is performed for the area that is selected in the Explorer when you perform this action.

Note:

- If you create a new synonym, you must manually perform a refresh to view the new files in the Developer Studio Explorer whether or not caching is enabled.
- You cannot cache information in the local development environment if the source control feature is enabled.

Preserved Table Positioning in Graphical Tools

Table positions are preserved when you work in the Join tool, Dimension Builder, and Cluster Join tool. The product will not reposition tables if you restart it.

In addition, usability enhancements are performed, such as allowing selection of multiple tables and delete confirmations.

Access to Any Text Editor

In this section:

Accessing Text Editors

How to:

Set Up the Default Action for the Open Option

You can access any text editor that is registered with your operating system based on the program that is set up to be the default program that opens the selected file type. For example, in Windows Explorer, select a .fex file, then right-click and select *Properties* from the context menu. Click *Change* and select *Notepad* as the default program to open this file type if it is not already associated with an application. The option to open procedures (.fex files) with Notepad will now be available through Developer Studio.

This option is valuable for developers who want to take advantage of the WebFOCUS language and use the editor of their choice.

Accessing Text Editors

You can access any text editor by right-clicking a file within the Developer Studio Explorer. A context menu for the file appears with the following default options:

- **Open in (Task Viewer/Text Editor/Registered Program)** to edit the procedure's components. Depending on this setting, the following options order will change.
  - *Open in (Task Viewer)*. Depending on the product settings, this option may show *Open in (Text Editor)* or *Open in (Registered Program)*, for example, Notepad.
  - *Open in Text Editor* to edit the procedure's code using the Developer Studio text editor.
  - *Open in (Registered Program)* to edit the procedure's code using an external editor, such as Notepad.
  - *Open in auto detected tool* to open the procedure in the tool used to create it (for example, the Report Painter, Resource Layout Painter, etc.). You must use this option if you need to open the file in the Resource Layout Painter or Compound Report Constructor because it is the only way to open procedures created in the tool used to create them. You cannot open procedures created with those tools from the Task Viewer.

Procedure: How to Set Up the Default Action for the Open Option

1. In the Explorer window, select *Options* from the Window menu. The Developer Studio Options dialog box opens at the General tab.
2. From the Default file editor drop-down list, select one of the following:
   - *Edit in DevStudio tool* to edit a procedure in the Developer Studio Task Viewer.
   - *Edit in Text Editor* to edit a procedure in Developer Studio' s text editor.
   - *Edit in Windows registered tool* to edit a procedure in Notepad, Wordpad, or other program as registered with the operating system.

Access to the WebFOCUS Administration Console

How to:

Connect to the WebFOCUS Administration Console With Another User ID

Change User IDs for the WebFOCUS Administration Console

You can configure and administer remote WebFOCUS Environments directly from Developer Studio. While you work from the WebFOCUS Environments area of the Developer Studio Explorer, a new icon is available in the toolbar for the WebFOCUS Administration Console. When you select this icon, you can administer against the selected WebFOCUS Environment. Administrative rights are required to perform administrative actions. A default user ID, admin, that does not require a password, is used to establish this connection. If this user ID has changed, the user will connect as a developer, visible in the level: display field and the user cannot perform administrative tasks.

Procedure: How to Connect to the WebFOCUS Administration Console With Another User ID

Perform the following steps to connect to the WebFOCUS Administration Console using a user ID other than the default user ID, admin.

1. From the WebFOCUS Administration Console, click *logout*.
2. From the next screen, click *Return to logon screen*.
3. Provide a user ID and password that has administrative rights to connect as an administrator and view administrative options.

Procedure: How to Change User IDs for the WebFOCUS Administration Console

When you initially use the WebFOCUS Administration Console, the default user ID, admin, is used.

1. From the WebFOCUS Administration Console, click *Configuration*, then *Startup Parameters*.
2. Click the *Administrators* radio button and select *Modify*.
3. Change the user ID, admin, to a desired name, or add new user IDs.
4. Click *Save*.
5. Close the browser and re-launch the Administration Console to view behavior.

HTTPS Certification for Reporting Applications

HTTPS certification has been completely implemented for reporting applications and can be used while accessing and developing against WebFOCUS Environments that use this security implementation on the Web server.

This option allows Developer Studio to use the Secure HyperText Transport Protocol, the standard encrypted communication mechanism on the World Wide Web while working against WebFOCUS environments that are configured to use HTTPS. When you configure a WebFOCUS environment through Developer Studio, you must select the HTTPS option from the Web Component object and choose the correct port.

Enhanced Installation Program

The installation program has been enhanced to make the product work out of the box for all supported configurations and available development scenarios. In addition, the wizard's screens have been enhanced.

New options include the following:

- Selection of a specific installation directory.
- An option to install and configure the New Atlanta ServletExec component.
- A verification tool that tests configuration.
- A non-interactive (silent) installation.
- Auto-configuration of IIS and user accounts to allow development right out of the box.
- Generation of log files.

For details, see the *Developer Studio Installation and Configuration* manual.

Configuration Options for Stand-alone Development

You have more options to configure Developer Studio for stand-alone development without using a full Web server.

This feature is accomplished by using the available HTTP Listener and Tomcat configurations. These are optional configuration options that you can perform post Developer Studio installation. Using the Web server for stand-alone development is still the default required option during the installation process.

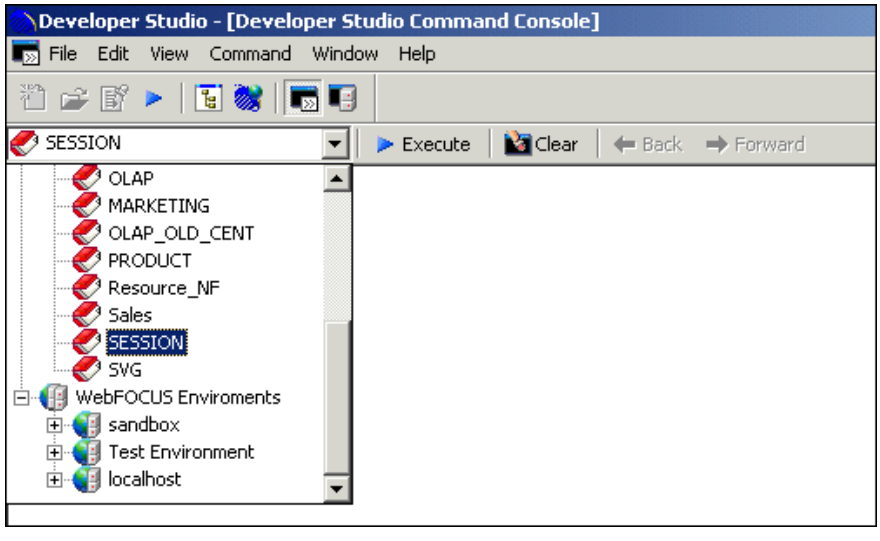
For details, see *Technical Memo 4546: Using Developer Studio Without a Web Server* and *Technical Memo 4548: Tomcat Configuration With Developer Studio*.

Developer Studio Command Console

The Developer Studio command console has a new drop-down list that shows all available projects and Reporting Servers configured within your WebFOCUS environments.

While working in the Projects area, the tool uses the project from which the tool was launched. Any request you submit while a project is selected uses the search path for the selected project based on the Reporting Server that is used for development in this area. (This is the default Reporting Server for the environment unless the default was modified from the Development object of the WebFOCUS Environment Properties dialog box.) It also allows you to work with any remote Reporting Servers that you configured. This allows the tool to work against all Reporting Servers available within the configured WebFOCUS environments. The Reporting Server's search path is used while you work in this area.

The Developer Studio command console's drop-down list is shown:



New Formatting and Styling Capabilities in the Resource Layout Painter

In this section:

Changes in the Default Control Type

Accessing Standard Reports in Managed Reporting

Changes to Properties Window

The Resource Layout Painter is enhanced for Version 5 Release 3 with greater styling capabilities for sizing graphs and creating a dynamic calendar.

Changes in the Default Control Type

The default control type for all single select parameters is now a drop down list. The default control type for all multi-select parameters will remain a list box.

Accessing Standard Reports in Managed Reporting

In Managed Reporting, the Resource Layout Painter can now access all the Standard Reports in a domain. Previously, the Resource Layout Painter access was limited to only reports in the current folder.

Changes to Properties Window

The following changes have been made to the Properties window:

- Property settings for an object are now set to *default*. No styling is applied to an object in order to permit a Cascading Style Sheet to control the look and feel. Styling that is set in the Properties window will override styling set in a CSS.
- Any property in the Properties window can be set back to default even after styling changes are made.

Browser Defaults Displayed in Design Window

In this section:

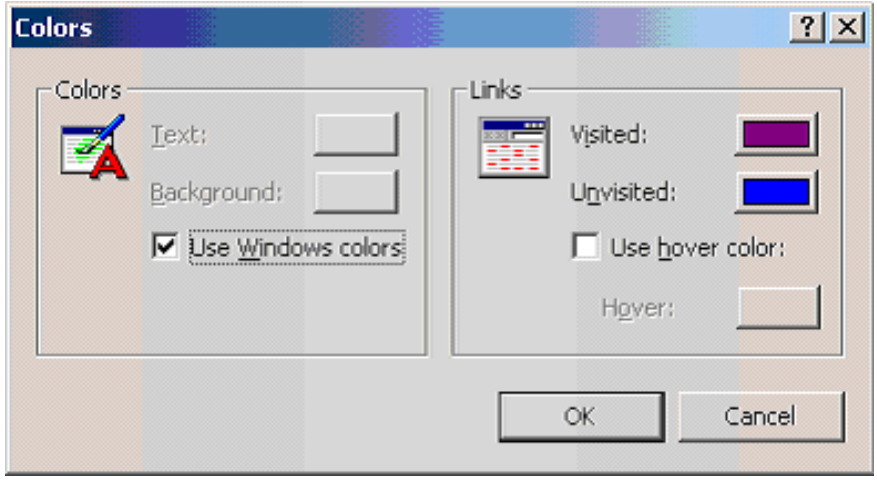
Using a Soft Alias With Resource Layout Painter Reports

Browser defaults such as font type and colors are displayed in design view to give the developer a consistent look and feel between design and preview modes. The browser options can be set in the dialog boxes described in this topic.

Note: The text size set in Design View should be representative of its appearance in a browser. However, the text may not match exactly due the relative font size used by the browser (large, larger, etc.).

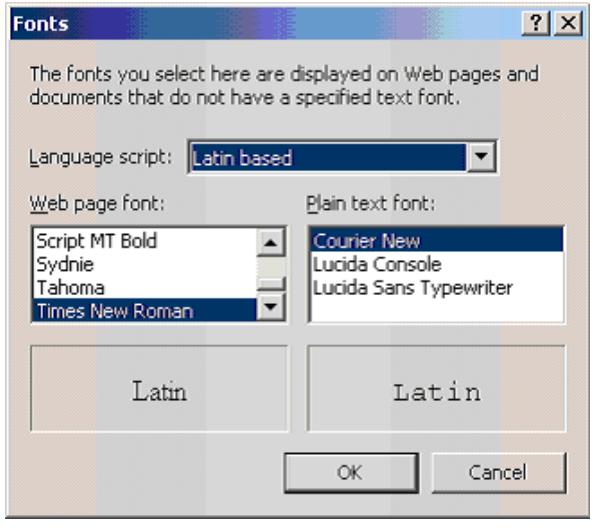
Settings for font, color, language, and accessibility for the browser can be accessed from the General tab of the Internet Options window. You can control these settings in the following ways:

- Color preferences can be accessed by clicking *Colors…*. The default colors used by the browser can be changed in the Colors dialog box:



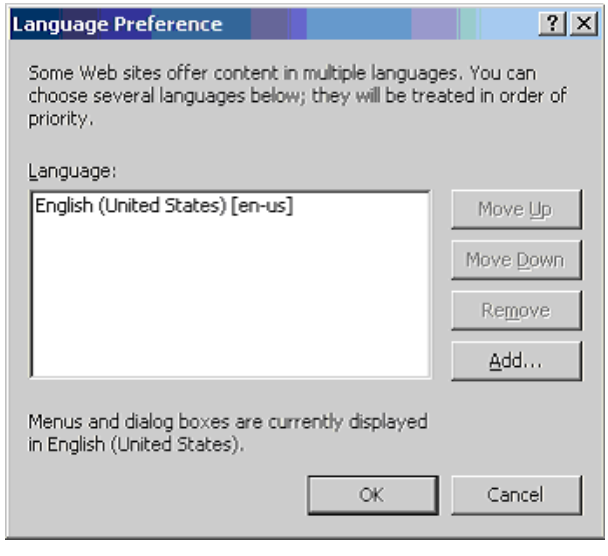
The color preferences set in Resource Layout Painter should match the preferences set in the Colors dialog box.

- Fonts can be set by clicking *Fonts...*. This opens the Fonts dialog box, where you can set the default browser font:



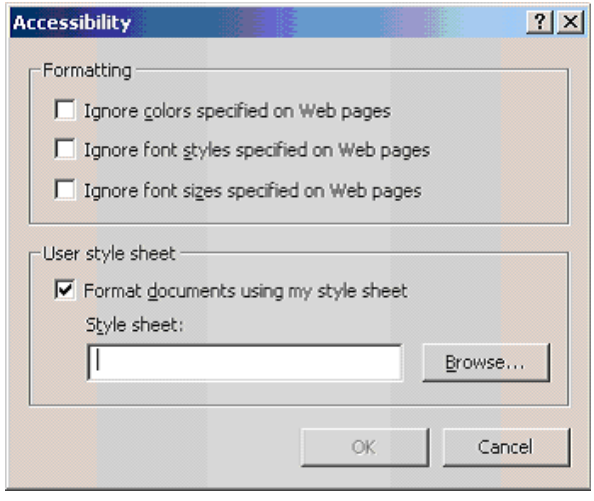
  The Resource Layout Painter will use the font specified in the Fonts dialog box.

- The language to be used in the browser can be set by clicking *Languages...*. This opens the Language Preference dialog box, where the language can be set:


Language Preference
Some Web sites offer content in multiple languages. You can choose several languages below; they will be treated in order of priority.
Language:
English (United States) [en-us]
Move Up
Move Down
Remove
Add...
Menus and dialog boxes are currently displayed in English (United States).
OK
Cancel

  The Resource Layout Painter will use the language specified in the Language Preference dialog box.

- Accessibility can be set by clicking *Accessibility...*. This opens the Accessibility dialog box, where you can set accessibility options:



The Resource Layout Painter will use the preference specified in an external Cascading Style Sheet.

Using a Soft Alias With Resource Layout Painter Reports

If a soft alias changes after Resource Layout Painter reports are generated, the developer will have to reopen and save the reports in the Resource Layout Painter to correct the hard coded alias setting. This must be done each time the alias is changed. However, this is not a common occurrence.

Automatic Population of Fields with Parameter Values

In this section:

All Option Enhancements

Example:

Automatically Populating Fields With Parameter Values

When the name of a dynamic parameter matches a corresponding field name in a data source, the Layout Painter automatically populates the field name for the parameter.

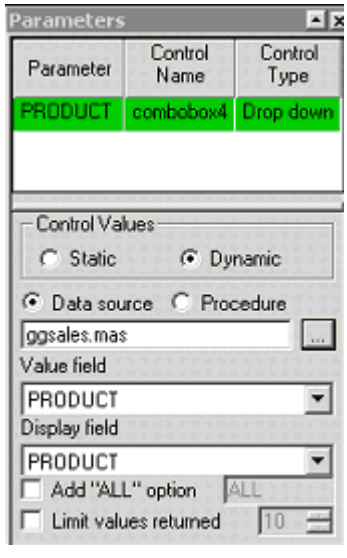
The data source is populated by a default based on the first data source specified by a TABLE FILE or GRAPH FILE command. The data source field is populated for the Value and Display field controls in the Parameters window. This generates a “run ready” Layout report as long as the parameter names match the field names.

Example: Automatically Populating Fields With Parameter Values

When the following report request is called from the Resource Layout Painter with a push button control, the parameters window is automatically populated, and the dynamic parameter is ready to run.

```
TABLE FILE GGSALES
SUM UNITS
BY PRODUCT
WHERE ( PRODUCT EQ '&PRODUCT.Product:.' );
END
```

The following is the Properties window for this procedure:

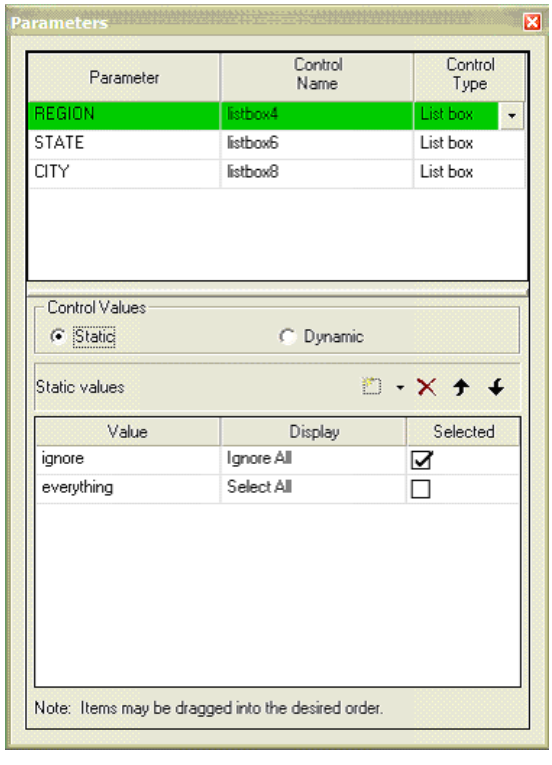


All Option Enhancements

The ALL feature allows developers to automatically add an ALL value to a list of parameter values. An ALL value does the following:

- For dynamic parameters, the ALL feature sends a value of FOCNONE to the reporting server alerting the server to bypass or ignore the parameter altogether. (Ignoring the parameter would return all values in the data source.)
- With static parameters, the ALL value typically uses JavaScript to return all of the values displayed in the list. This prevents the user having to select every value in the list manually. When using the ALL feature with static parameters, you can select from the following options:
  - *Add everything value*. This option uses JavaScript to send every value present in the parameter list to the server at run time.
  - *Add ignore value*. This options sends FOCNONE to the server at run time and is mainly for use with complex applications.

When the options are added to the Value list, the display text can be customized, but the value cannot be changed. The default values and display text are as displayed in the following:



Note: Sending FOCNONE to a compound WHERE criteria will result in the entire criteria being ignored. Therefore, when working with multiple parameters that may be chained together, each parameter should be created in an individual WHERE statement as follows:

```
WHERE ( REGION EQ &REGION.(OR(Midwest,Northeast)).Region:. );
WHERE ( ST EQ &STATE.(OR(CA,CT)).State:. );
WHERE ( CITY EQ &CITY.(OR(Atlanta,Boston)).City:. );
```

Sizing a Graph in Resource Layout Painter

Previously, the size of a graph was set in the Graph Assistant, and you could not alter this size in the Resource Layout Painter. In Version, 5.3 a *Size to fit* option has been added to the Properties window.

In the Overflow property for a graph, you can now select *Size to fit*. This will adjust the graph size to fit within the area designated for a graph object in the Layout.

Attaching a Dynamic Calendar in the Resource Layout Painter

How to:

Set Calendar Properties

Example:

Returning a Range of Dates From a Procedure

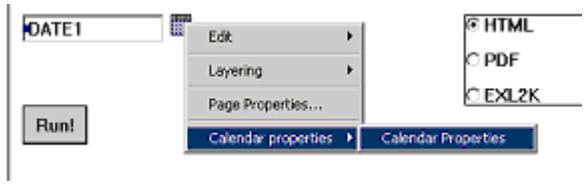
Date parameters now have the option of utilizing a new built-in calendar control that allows users to select the desired date or range of dates in a pop-up dynamic calendar. A procedure that is added to or referenced in the Resource Layout Painter and contains date parameters will have a new Calendar control type available in the Properties window.

When the Calendar control type is selected, a text box with a calendar icon will display in the Design view of the Layout. The text box is the only control available for the calendar, and the icon will always display to the right of the text box. The icon cannot be positioned independently from the text box.

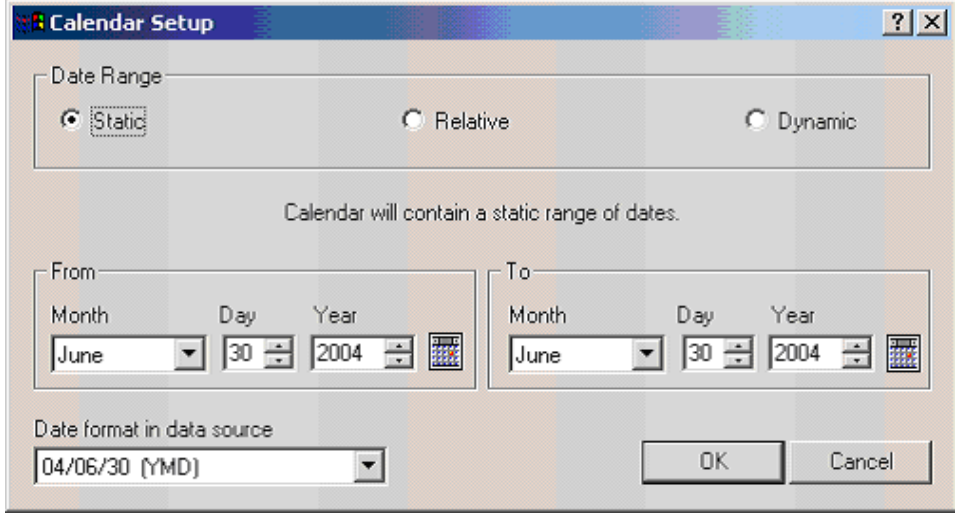
Note that when programmatically returning a date to the calendar, the date must be in a FOCUS date format that specifies the complete date, including a two digit month, two digit day, and a four digit year.

Procedure: How to Set Calendar Properties

1. Right-click the calendar icon and select *Calendar Properties*:



When selected, the following menu appears:



This menu allows the developer to set the range of dates available to the user at run time. Available dates will be represented as an active hyperlink (blue and underlined) and unavailable dates will be static (black without underlines).

2. Select an option for setting the range of dates:

   - **Static.** This option will set a static date range in which the developer will select a start date and an end date using a pop up calendar or by clicking the month, day, or year from the controls. This setting is the default.

     By default, the current date is selected and circled in red. As you scroll through the calendar with the left/right arrows, the currently selected day will remain highlighted for each month. Clicking a date will add that date to the control. Dates can be selected by scrolling left to right, entering the month, day, and year as text, or by selecting the month, day, and year from the drop-down list and spin boxes.

   - **Relative.** This option allows the developer to set a specific number of days, months, and years relative to the current date. The current date (at run time) will always be the reference or starting point and the calendar will show a number of days, months, and years relative to the current date. The range could be all in the past (for example, five years prior to the current date) or all in the future (for example, five years in the future).

   - **Dynamic.** This option allows the developer to point to a procedure that returns a range of dates. Clicking the *Browse...* button allows the developer to choose a preexisting procedure located in the current APP (local projects/data server) or Domain (MRE). The procedure must return two date values on the same data line in XML format. The date values must be returned in a format that returns two digits for the month and day, and four digits for the year, for example MM/DD/YY.

Example: Returning a Range of Dates From a Procedure

The following returns the complete range of date values for HIREDATE.

```
-* File getdates.fex
TABLE FILE EMPDATA
SUM MIN.HIREDATE MAX.HIREDATE
ON TABLE PCHOLD FORMAT XML
END
```

The XML output is:

```
<?xml version="1.0" encoding="ISO-8859-1" ?>
- <fxf version="1.0" data="hold">
- <report records="41" lines="1" columns="2" rows="1">
  <target format="" version="" type="" destination="HOLD" />
- <column_desc>
  <col colnum="c0" fieldname="HIREDATE" alias="HDAT" datatype="date"
width="8" focus_format="YMD" description="" accept="" help_message=""
title="" within="" property="" reference="" valign="right" />
  <col colnum="c1" fieldname="HIREDATE" alias="HDAT" datatype="date"
width="8" focus_format="YMD" description="" accept="" help_message=""
title="" within="" property="" reference="" valign="right" />
  </column_desc>
- <table>
- <tr linetype="data" linenum="1">
  <td colnum="c0" rawvalue="890301">890301</td>
  <td colnum="c1" rawvalue="910513">910513</td>
  </tr>
  </table>
  </report>
  </fxf>
```

Customizing Dynamic Parameters

In this section:

Hidden Parameters

Dynamic Parameters

Example:

Retrieving Dynamic Parameter Values With One Value

Retrieving Dynamic Parameter Values With Two Values

Retrieving Values for Chained Variables With Caching Disabled

Retrieving Chained Variable Values With Caching Enabled

A new option has been added to allow a customized retrieval of dynamic parameter values. Previously, the only retrieval option was to point to a field in a data source. Now, by using a custom procedure, the developer can use the FOCUS language to utilize temporary HOLD files, filtering, etc. This allows the Layout Painter to better integrate with a multitude of large and/or proprietary data sources that may require unique retrieval methods. The procedure must meet the following criteria:

- The procedure must return a name and value pair for each parameter value that will populate the list. The first value is the submission value which is passed to the form when the user clicks the Submit button. The second value is the display value which is what the user will see in the control. These two values can be the same or different.
- The procedure must return the two data values on a single data line in XML format (PCHOLD FORMAT XML).

Note: Different parameters in the same procedure can use both this option and the data source method.

For chained parameters, there are two options based on whether caching is enabled.

- By default, caching of parameter values in not enabled. Each parameter control must be mapped to its own procedure and the developer is responsible for writing filters or WHERE criteria to properly filter the hierarchy of controls.
- If caching is enabled for the chained parameters, a single procedure can be used to populate the controls of the chained variables. In this case, the Resource Layout Painter writes the WHERE criteria.

  To enable caching, click the Chain Order icon and right-click one of the chained parameters.

Example: Retrieving Dynamic Parameter Values With One Value

The following example shows the same value being used for the submission value and display value.

```
TABLE FILE GGSALES
SUM FST.PRODUCT
BY PRODUCT
ON TABLE PCHOLD FORMAT XML
END
```

The XML output is:

```
  <?xml version="1.0" encoding="ISO-8859-1" ?>
- <fxf version="1.0" data="hold">
- <report records="4317" lines="10" columns="2" rows="10">
  <target format="" version="" type="" destination="HOLD" />
- <column_desc>
  <col colnum="c0" fieldname="PRODUCT" alias="E01" datatype="char"
width="16" focus_format="A16" description="Product name" accept=""
help_message="" title="Product" within="" property="" reference=""
valign="left" />
  <col colnum="c1" fieldname="PRODUCT" alias="E02" datatype="char"
width="16" focus_format="A16" description="Product name" accept=""
help_message="" title="Product" within="" property="" reference=""
valign="left" />
  </column_desc>
- <table>
- <tr linetype="data" linenum="1">
  <td colnum="c0">Biscotti</td>
  <td colnum="c1">Biscotti</td>
  </tr>
- <tr linetype="data" linenum="2">
  <td colnum="c0">Capuccino</td>
  <td colnum="c1">Capuccino</td>
  </tr>
- <tr linetype="data" linenum="3">
  <td colnum="c0">Coffee Grinder</td>
  <td colnum="c1">Coffee Grinder</td>
  </tr>
- <tr linetype="data" linenum="4">
  <td colnum="c0">Coffee Pot</td>
  <td colnum="c1">Coffee Pot</td>
  </tr>
```

Example: Retrieving Dynamic Parameter Values With Two Values

The following example shows two different field values being used for the submission value and display value. In this case, PRODUCT (Product Description) is used for the display value and PCD (Product Code) is used as the submission value.

```
TABLE FILE GGSALES
SUM FST.PRODUCT
BY PCD
ON TABLE PCHOLD FORMAT XML
END
```

The XML output is:

```
<?xml version="1.0" encoding="ISO-8859-1" ?>
- <fxf version="1.0" data="hold">
- <report records="4317" lines="10" columns="2" rows="10">
  <target format="" version="" type="" destination="HOLD" />
- <column_desc>
  <col colnum="c0" fieldname="PCD" alias="E01" datatype="char" width="4"
focus_format="A04" description="Product Identification code (for sale)"
accept="" help_message="" title="Product ID" within="" property=""
reference="" valign="left" />
  <col colnum="c1" fieldname="PRODUCT" alias="E02" datatype="char"
width="16" focus_format="A16" description="Product name" accept=""
help_message="" title="Product" within="" property="" reference=""
valign="left" />
  </column_desc>
- <table>
- <tr linetype="data" linenum="1">
  <td colnum="c0">C141</td>
  <td colnum="c1">Espresso</td>
  </tr>
- <tr linetype="data" linenum="2">
  <td colnum="c0">C142</td>
  <td colnum="c1">Latte</td>
  </tr>
- <tr linetype="data" linenum="3">
  <td colnum="c0">C144</td>
  <td colnum="c1">Capuccino</td>
  </tr>
```

Note: The procedure does not have to follow this FOCUS syntax exactly, but the end result must be two values per data line in XML format.

Example: Retrieving Values for Chained Variables With Caching Disabled

In the following procedures, there are three parameters (REGION, ST, CITY). Caching is disabled, so each parameter control must be mapped to its own procedures.

Procedure 1 1 (REGION)

```
TABLE FILE GGSALES
SUM FST.REGION
BY REGION
ON TABLE PCHOLD FORMAT XML
END
```

Fex 2 (ST)

```
TABLE FILE GGSALES
SUM FST.ST
BY ST
WHERE REGION EQ &REGION;
ON TABLE PCHOLD FORMAT XML
END
```

Fex 3 (CITY)

```
TABLE FILE GGSALES
SUM FST.CITY
BY CITY
WHERE REGION EQ &REGION;
WHERE ST EQ &STATE;
ON TABLE PCHOLD FORMAT XML
END
```

Example: Retrieving Chained Variable Values With Caching Enabled

In the following example, caching is enabled, so a single procedure is used to populate the controls.

```
TABLE FILE GGSALES
SUM FST.REGION
FST.ST
FST.CITY
BY REGION
BY ST
BY CITY
ON TABLE PCHOLD FORMAT XML
END
```

The XML output is:

```
- <table>
- <tr linetype="data" linenum="1">
  <td colnum="c0">Midwest</td>
  <td colnum="c1">IL</td>
  <td colnum="c2">Chicago</td>
  <td colnum="c3">Midwest</td>
  <td colnum="c4">IL</td>
  <td colnum="c5">Chicago</td>
  </tr>
```

Hidden Parameters

You can now select a HIDDEN control type in the Resource Layout Painter. This allows parameter name value pairs to be passed in the form without the user seeing them. This option can be chosen in the Parameters window in the Control Type column. When this control type is selected, the current control assigned to the parameter will be removed. The value of the parameter can be entered in the Value column of the Parameter window.

Dynamic Parameters

All parameters are now dynamic by default.

If a developer wishes to change a parameter from dynamic to static, and that parameter has static values specified in the WHERE criteria, the developer can click the *static* button in the Parameters window to change the setting.

French and Japanese Localized Versions

Developer Studio is available in French and Japanese localized versions. A localized version is a software product in which the entire user interface (for example, menus, wizards, and online Help) is displayed in a particular language.

To obtain a localized version of Developer Studio, see your Information Builders representative.

CHAPTER 3

Managed Reporting Enhancements

Topics:

- Working With Procedures in Application Files in the Data Servers Component
- Increased Number of Domains
- Importing and Managing End User Custom Reports
- Data Security
- Section 508 Compliance

Dashboard Administrative Enhancements

- Managing Users
- Customizing the Look of the HTML Report and Graph Assistant
- Dashboard Template Enhancements
- Creating a Locked Content Block
- Toolbox Option
- New Buttons in the View Builder
- Handling Messages in Dashboard

Dashboard Content Enhancements

- Creating a Deferred Status Content Page
- Positioning Items in a List Block
- Text Editor Enhancements
- Domain/Role Tree Usability

This chapter describes all of the features for Managed Reporting and Dashboard in Version 5 Release 3.

Working With Procedures in Application Files in the Data Servers Component

In the Managed Reporting Applet, you can run a procedure from an application file located in the Data Servers component. This capability also exists in Developer Studio. Both Developer Studio and the Managed Reporting Applet use self-service amper auto-prompting.

Increased Number of Domains

In the User Administrator User Properties Domain option, the maximum number of domains an Administrator can assign to a Developer for content development has been increased from 16 to 30.

Importing and Managing End User Custom Reports

Using Developer Studio, Administrators can bring a procedure (FEX) into the Managed Reporting Repository from their local machine to the user's Custom Reports folder accessed from the User Management component. This is accomplished through a drag and drop action or a cut or copy and paste action. This feature applies only to Developer Studio.

In addition, the ability to create folders and cut or copy and paste procedures within or across folders within the Custom Reports folder has been added to the User Management component from Developer Studio and Domain Builder Applet and from the Domains Applet.

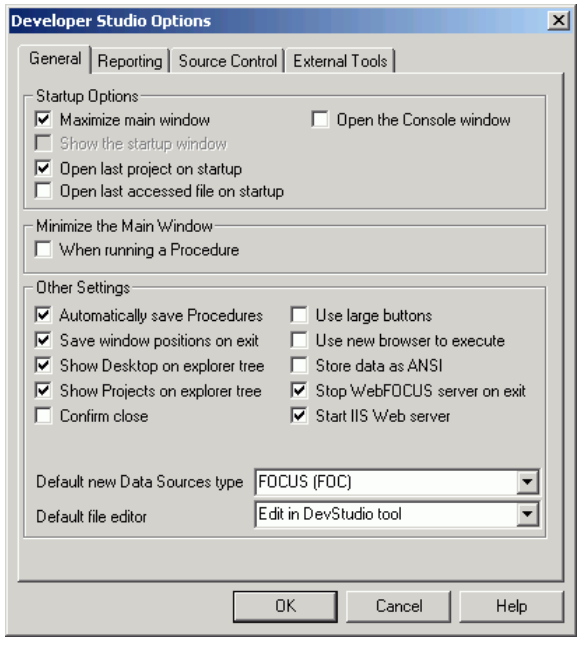
When a folder within a Custom Reports component or a specific Custom Report is selected, these options are enabled on the right-click menu and on the toolbar.

Procedure: How to Import Custom Reports

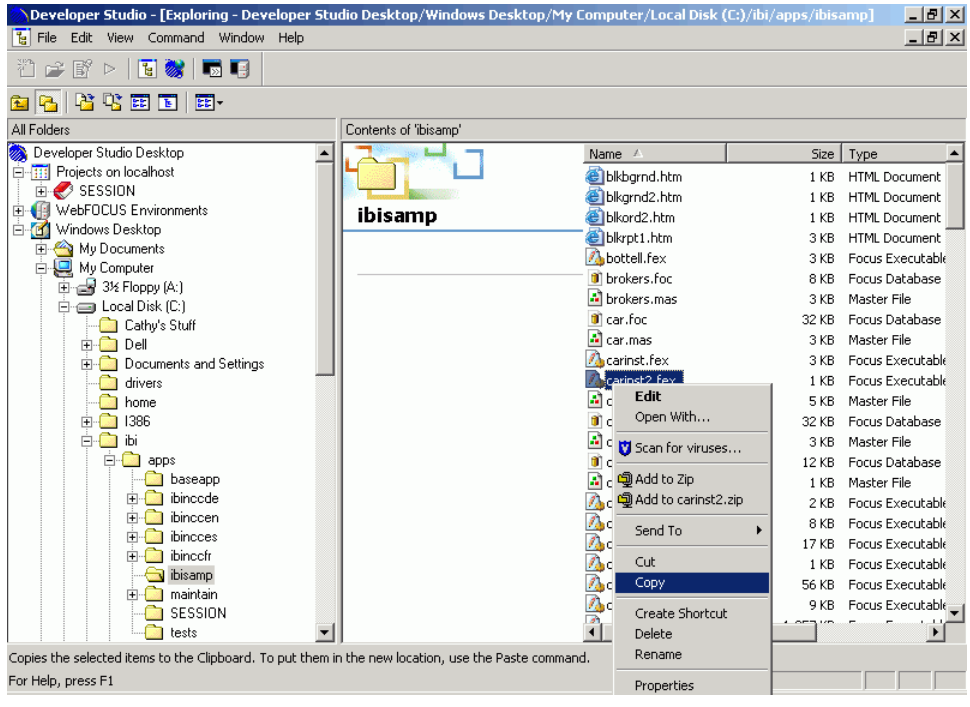
1. Open Developer Studio.
2. Select *Options* from the Window menu.

   The Developer Studio Options dialog box opens.

3. Ensure the *Show Desktop on explorer tree* check box in the Other Settings field is selected and click *OK*.



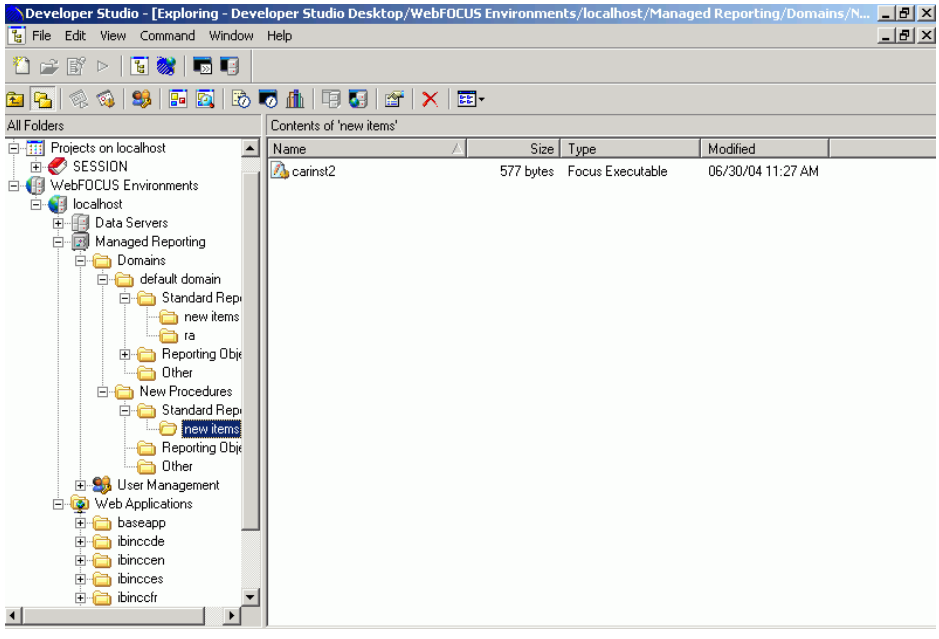
4. Navigate to the procedure you want to copy, then right-click the procedure and select *Copy* from the menu.



5. In the User Management component of the selected WebFOCUS Environment, navigate to the Custom Reports folder where you want to paste the procedure.

6. Right-click the folder and select *Paste* from the menu.

7. Paste the procedure into the appropriate folder.



Note: Alternatively, you can drag and drop the procedure from its original location to the Custom Reports folder. Note that when you do this, or when you cut the procedure instead of copy, the procedure is not removed from its original location.

Data Security

WebFOCUS allows administrators to bind FOCUS DBA security with the user's Managed Reporting ID, Managed Reporting domain HREF, or a named WebFOCUS script variable such as might be returned from a custom developed WebFOCUS callable exit. The feature takes advantage of the SET PERMPASS command to avoid the security exposure where a knowledgeable individual could reissue the SET USER command within their request.

For details on SET PERMPASS, see *Non-Overridable User Passwords (SET PERMPASS)* in Chapter 1, *WebFOCUS Reporting Language Enhancements*.

Section 508 Compliance

Section 508 is an option in the Managed Reporting User Administration - User Properties dialog that, when checked, allows a user to utilize Section 508 compliant components in WebFOCUS. These include online help and the HTML Report Assistant and HTML Graph Assistant as accessed through the Business Intelligence Dashboard. The following users types are enabled for Section 508: Developers, Analytical Users, Users, and HTML Users.

Managing Users

How to:

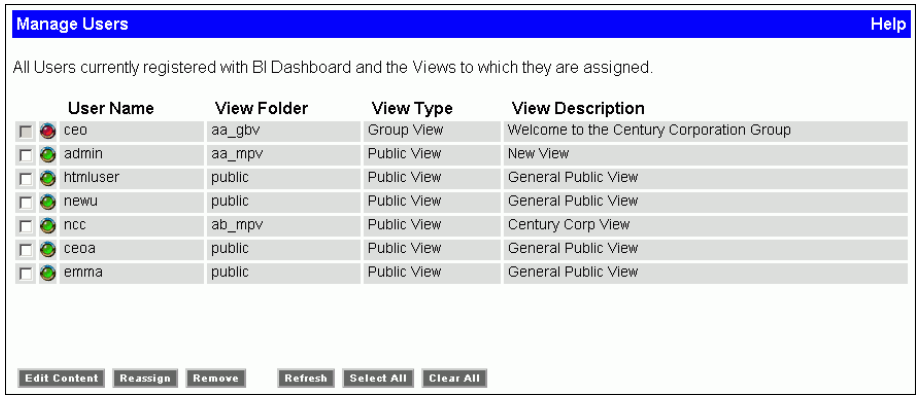
Edit User Content

Reassign a User's View

Remove Users From Dashboard

You can manage user's views (public, group, and personal) from the View Builder. The Manage Users option allows you to view and update the content of the user's personal pages and the look of their Dashboard view.

Changing, or reassigning, a user's view and content is useful when you want to update the look or the content of a view without having to start over from scratch. It's also useful if a user changes groups and you need to update their view and/or content, for example, from the Human Resources group page to the Accounting group page.



The Manage Users window provides the following information:

- Status of the user. If a user is logged into Dashboard, a red button appears next to the User Name (as with the CEO user above). Edits cannot be made to a user's view when they are logged in. Green indicates that the user is not logged into Dashboard and edits can be made to the user's view.

  Note: Before managing users content, refresh the list of users to get the latest user status since a user may log into or out of Dashboard after the page has been created.

- User name. Only those users who have logged into Dashboard appear in the Manage Users window.
- The View Folder, View Type, and View Description of the look the user currently has assigned to them.

Procedure: How to Edit User Content

Note: You can only edit content for one view at a time.

1. From the View Builder, click *Manage Users*.
2. Select the user you want to edit content for and click *Edit Content*.

   The Content Window opens.
3. Edit content as necessary.
4. Click *Manage Users* to save changes and return to the Manage Users window.

Procedure: How to Reassign a User's View

1. From the View Builder, click *Manage Users*.
2. Select the user or users you want to reassign.
3. Click *Reassign*.
4. Select the new view look from the drop-down list.
5. If you want to replace the user's content with the content from the new view, click the *Replace User Content with View Content* check box.

   When you replace content, the user still has access to all of the domains (and the items in those domains) they are assigned to. Only Dashboard specific items are replaced, such as content pages and content blocks. The user's Favorites and Recent lists are cleared when you select the *Replace User Content with View Content* check box.
6. Click *Submit*.

Procedure: How to Remove Users From Dashboard

Note: This only removes the user from Dashboard, not Managed Reporting. If the user logs in to Dashboard again, they will be added to the Manage Users list again.

1. From the View Builder, click *Manage Users*.
2. Select the user or users you want to remove.
3. Click *Remove*.
4. Click *OK* to the confirmation popup dialog box.

Customizing the Look of the HTML Report and Graph Assistant

When you select the colors and/or wallpaper for your Dashboard banner, you can also select that these customizations be inherited by the HTML Report Assistant and Graph Assistant (when used from the Dashboard view).

Procedure: How to Customize the Look of the HTML Report and Graph Assistant in Dashboard

1. From the View Builder click *Colors*.
2. Select the colors and/or wallpaper.

   Background color 1 is the top area, background color 2 is the main body area of the tool.
3. Click the *Report Assistant and Graph Assistant inherit banner colors* check box.
4. Click *Preview*.
5. Click *Save*.

Note: For changes in this window to be effective, you must click *Preview* and *Save* before you exit this window.

Dashboard Template Enhancements

How to:

Create a Custom Template

Reference:

Dashboard Templates

There are two templates available from the Look window in the View Builder that you can use to create a Dashboard view that does not have a separate area for the logo embedded in the banner.

Additionally, you can create a custom template for your Dashboard view and access it through the View Builder.

Procedure: How to Create a Custom Template

1. Navigate to the worp_html folder in the worp directory structure.

   In this directory there are folders for each of the Dashboard looks, or templates (worp0 through worp7).

2. Copy and rename one of these directories (the one that most closely resembles the look you want to create) to a new directory under worp_html.

   The new directory name should begin with "custom_", for example "custom_new".

3. In the directory for your new look, edit the file profile.prf.

   This file contains two references to the directory name for the template. Change both of these references to reflect the new directory name. If you do not make these changes, your template will still work correctly. However, these references need to be updated for the Dashboard Migration Utility to correctly migrate the views that use the custom templates.

4. Edit the HTML and CSS files as necessary to make your customizations.

   The tags bg1, bg2, etc. should be maintained in these files so that the color selections appear in the View Builder Colors page.

   a. The banner.html and banner.css files control the banner display.

   b. Domain.css controls the appearance of the left sidebar containing the Domain Tree and Role Tree.

   c. Ctrl.css controls the appearance of the control bar that displays over the content blocks.

   d. Content.css controls the appearance of the content blocks.

   e. Ibitools.css controls the appearance of toolbar 1, and customtools.css controls the appearance of toolbar 2.

5. Open the View Builder and select the new look, which will show up under the distributed looks.

   Note: When you make changes to the view outside of the View Builder, you will need to go back into the View Builder and select your customized view again in order to see your changes reflected in the template.

Reference: Dashboard Templates

Template 7 (WORP6)

The colors for this template are completely customizable. You may also use an image for a wallpaper effect in the banner background area. This template does not require a logo.

Template 8 (WORP7)

The colors for this template are completely customizable. You may also use an image for a wallpaper effect in the banner background area. This template does not require a logo and the banner is shorter than the other templates.

Creating a Locked Content Block

You can create a content block for a Public View that cannot be edited or deleted by a user after they create their personal view from the Public View.

In a user's personal view, the Edit option is not available for locked content blocks. In addition, the option to delete or edit locked blocks from the Content window is not available. A Dashboard user cannot remove a page containing a locked block.

The locked block is designated with a lock icon in the View Builder, Personalize content, and Manage Users sections of Dashboard. Users receive an error message if they attempt to remove a content page that contains a locked block.

The Lock Block check box is also available in the Manage Users area of the View Builder.

Procedure: How to Create a Locked Content Block

1. From the Public Views or the Manage Users window, select the Public View you want to add content to and click *Edit Content*.
2. From the Content window, select the content page in which to add content.
3. Click *Add Block*. The Add Block window opens.
4. Select the block type and contents.
5. Click the *Check to Lock Block* check box.
6. Click *Save*.

Toolbox Option

The Toolbox option menu item has been moved to the main View Builder page. Once you create a toolbox you can use it to create a tool bar for a public or group view.

New Buttons in the View Builder

Select All and Clear All buttons have been added to the Public and Group Views windows.

Handling Messages in Dashboard

A standard message appears for all http 500 series errors, which reads something like the following:

"An HTTP 500 error has been returned when attempting to communicate with the WebFOCUS web components. The application server log contains information on why this error has occurred. Contact your WebFOCUS Administrator or Information Builders Customer Support Services for further assistance."

All other http errors are handled by the Web server.

By default, all Dashboard specific error messages are generated by WORP_Error.jsp. You can implement your own error page by editing the "ERROR" entity in the worp/conf/bid-config.dtd file:

```
<!ENTITY ERROR "&JSP;/WORP_Error.jsp">
```

All messages that display on the user's screen are written to the Web Application server log file. The location of the Web Application server log file is different for different Web Application servers. Check your Web Application server documentation for the location of the log file.

Creating a Deferred Status Content Page

You can create a content page that contains the Deferred Status Report interface. This means that you can view the status of deferred reports without opening a new window to view the Deferred Status Report interface.

The Deferred Status content page is not available for Public Views, since the Public user cannot run deferred reports.

There can only be one Deferred Status page per view.

Procedure: How to Create a Deferred Status Content Page

1. From the Content window, click *Add Deferred Status Page*.

   If you are creating a Public view, the Add Deferred Status button will not appear since the Public user does not have access to this feature.

2. Enter the tab name in the Page Description text box.

3. Click *Update*.

   When a page is added, it is added as the last page. You can rearrange the order of the content pages using the Move Left, Move Right, or Set Default buttons. The Set Default button promotes the current page to the first page.

Positioning Items in a List Block

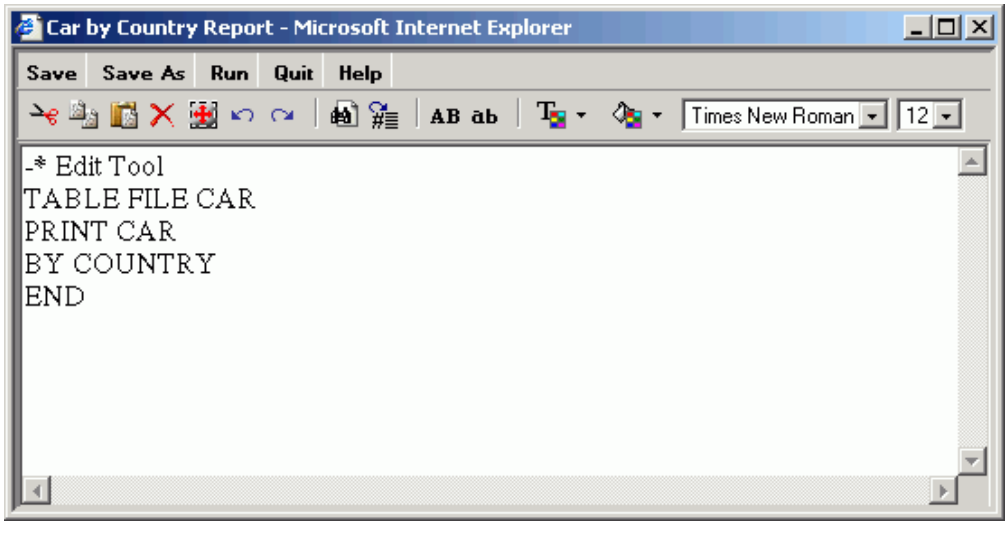
Administrators and authenticated users can position items in a list block using the up and down arrows in the Add or Edit Content windows. Only one item can be moved at a time.

The items in a list block appear in the Dashboard in the order they were last saved.

The up and down arrows will always display in the Content window, although they will only be functional for a list block.

Text Editor Enhancements

You can use the text editor to create, view, edit, and run the source code for Custom Reports in Dashboard. The text editor enables you to use familiar editing techniques, such as cut, copy, and paste. You can also find and replace text and specify case.



The following table describes all of the functions available in the Dashboard text editor.

Button	Action...
Save - Save button	Saves the report. Acts as "Save As" the first time you save the report.
Save As - Save As button	Saves the report in the Custom Reports folder with a name you specify.
Run - Run button	Runs the current report.
Quit - Quit button	Exits the Editor window. If you made changes to the original report, a window prompts you to save or cancel the changes.
Help - Help button	Opens the online help.
- Cut, Copy and Paste buttons	Cut, copy, or paste, respectively, the highlighted text.

Button	**Action…**
- Delete, Select All, Undo, and Redo buttons	Delete, select all, undo, and redo, respectively.
- Find and Replace button	Find and replace text.
- Go to line button	Enables you to go to a particular line number in the report.
- Uppercase button	Converts highlighted text to upper case.
- Lowercase button	Converts highlighted text to lower case.
- Text color button	Sets the text color in the editor.
- Background color button	Sets the background color of the editor. **Note:** The text color and background colors are for the current session only.
- Font drop-down menu	Enables you to change the font of the editor.
- Font size drop-down menu	Enables you to change the font size of the text in the editor.

Note:

- If you create a Custom Report using the HTML Report Assistant or HTML Graph Assistant, and then edit the report with the editor, you can than only open and edit the report using the editor.
- If you use a Netscape browser, the editing toolbar, which begins with the cut, copy, paste features listed in the table, does not appear. Use the standard control keys (Ctrl+x, Ctrl+c, Ctrl+v) to cut, copy, and paste.
- When you click the X in the upper right hand corner of the text editor, the procedure is saved, however the Domain Tree does not refresh. To refresh the Domain Tree click *Refresh* under the domain name.

Domain/Role Tree Usability

Previously, users could open and close a folder by clicking on the plus and minus signs in the Domain or Role Tree. Now, users can also open and close folders by clicking on the folder icon itself.

CHAPTER 4

Ad Hoc Reporting Enhancements

This chapter describes all of the features for ad hoc reporting in Version 5 Release 3.

Topics:

- Redesigned HTML Report Assistant and Graph Assistant
- HTML Report Assistant and Graph Assistant: Customizing Default Colors
- HTML Report Assistant and Graph Assistant: Save Options
- HTML Report Assistant and Graph Assistant: Working With Joins
- HTML Report Assistant and Graph Assistant: Selection Criteria Features
- HTML Report Assistant and Graph Assistant: Styling Specified Fields
- HTML Report Assistant: Subtotal, Sub-total, and Recalculate
- HTML Report Assistant: Warning Message in Heading
- HTML Report Assistant: New Display Formats
- HTML Report Assistant: Fully Qualified Field Names
- HTML Graph Assistant: Auto Arrange Feature
- HTML Graph Assistant: Text Rotation
- HTML Graph Assistant: Graph Types and Graph Styles
- HTML Graph Assistant: Graph Display Formats
- OLAP Features

Redesigned HTML Report Assistant and Graph Assistant

The HTML Report Assistant and HTML Graph Assistant interfaces have been redesigned to modernize the look and feel of the tools, as well as improve usability. Image and button controls have been replaced with new Windows-like toolbars and use icons consistent with Developer Studio. Basic operations have been organized and logically grouped for consistency.

Hard-coded image and styling references have been replaced with Cascading Style Sheets (CSS). Cascading Style Sheets have been used to centralize all of the styling code for the interfaces, enabling users to change colors to match their own applications. Color settings made in the WebFOCUS Portal (Business Intelligence Dashboard) can be automatically propagated to the HTML Assistants.

The Report Assistant and Graph Assistant look different, but their functionality has not changed, except as described in the specific features outlined in this topic.

HTML Report Assistant and Graph Assistant: Customizing Default Colors

Example:

Customizing the Background and Text Colors

Reference:

Rules for Customizing the CSS

You can customize the background color and text color to set new defaults for reports and graphs generated by the HTML Report and Graph Assistants. You can accomplish this by editing the following Custom Style Sheet (CSS) file in a text editor, such as Notepad:

\ibi_html\javaassist\ibi\html\assist\rpasstie.css

Example: Customizing the Background and Text Colors

1. Open the following file in a text editor:

   \ibi_html\javaassist\ibi\html\assist\rpasstie.css

2. Create a backup copy before you make any changes.

3. Apply your changes only to the background color and color variables. For example, you can replace the color codes as follows:

```
BODY{
/* background-color: C0C0C0;  */  /* silver */
background color: Blue;
margin: 0;
}
BODY, A {
/* color: #000000; */
color: white;
}
```

Tip: Retain the original style with comments /* */ to easily change the colors back to the default style.

Reference: Rules for Customizing the CSS

The following are some basic rules for customizing the CSS file:

- Styling changes are made only in the CSS files.
- It is not necessary to edit JSPs.
- If you make a change in one CSS file, it applies to both the Report and Graph Assistant.
- You can only change the background and font colors. Other changes to the CSS are not supported.
- Color changes should not affect toolbars, menus, input boxes, icons, and other operational text.

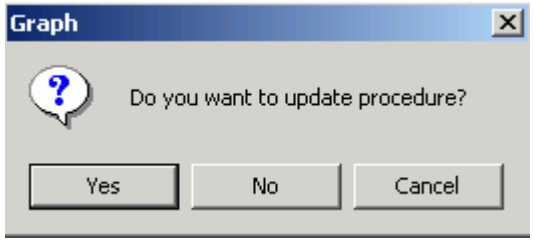
There is no migration utility for CSS changes.

HTML Report Assistant and Graph Assistant: Save Options

When you click the Save or Save As buttons you save your report (procedure). If you make changes in your report without subsequently saving them and then click Quit, you are prompted with the following options:

- **Yes.** Click to save your changes and exit the report.
- **No.** Click to discard your changes and exit the report.
- **Cancel.** Click to return to your report to continue working or use Save or Save As to save your changes and then click Quit to exit your report.

The following image shows Save dialog box.



HTML Report Assistant and Graph Assistant: Working With Joins

How to:

Create a Join

Create a Define-based Join

Create Multi-field Joins

Delete a Join

Edit a Join

A join is a temporary connection between two or more data sources that share at least one common field. Once you join two data sources, each time WebFOCUS retrieves a record from the first data source (host file), it also retrieves the matching records from the second data source (target file).

You use the Join tool to link data sources in both Report Assistant and Graph Assistant. The Join tool provides a graphical method for creating and manipulating joins. You can also create define-based joins and multi-field joins.

When you access the Join tool, the window displays a field list for the host data source (which you specified when you created the Standard Report or Reporting Object), and a field list for any target data source you add to the window.

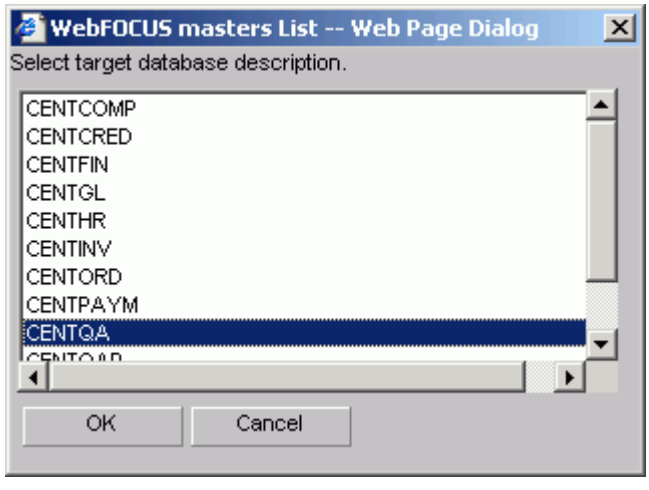
Important:

- Only Managed Reporting Administrators and Developers have access to the Join Options tab. The Join Options tab is not available in self-service mode or to Analytical Users.
- The Join Options tab is not available in the HTML Graph Assistant for Developer Studio. You can only create joins using the Join tool available in Reporting Objects.

Procedure: How to Create a Join

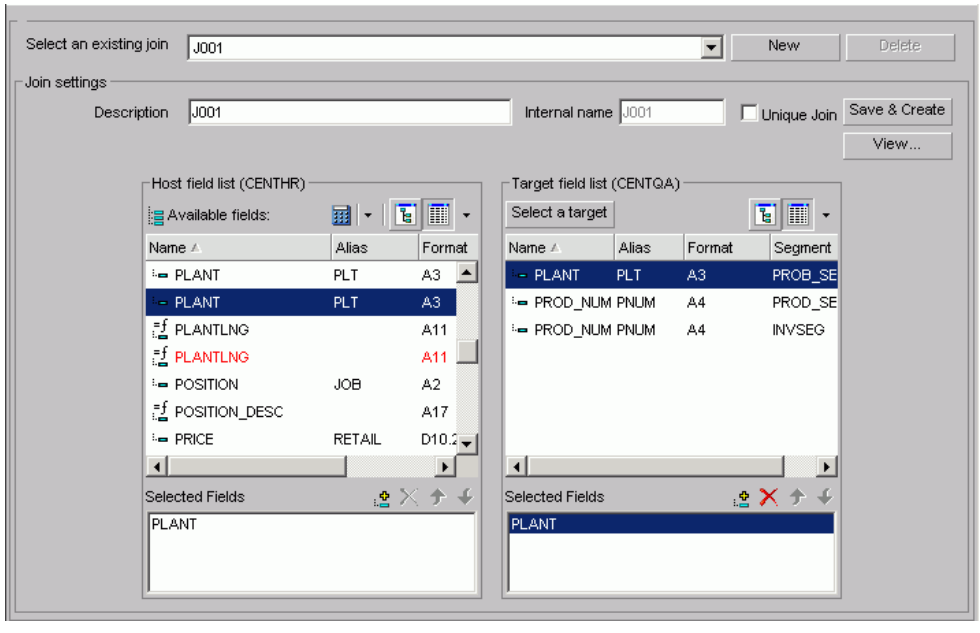
1. Click the Join options tab in Report Assistant or Graph Assistant and click *New*.

   The WebFOCUS masters list dialog box opens where you select a target data source.



2. Select a data source and click *OK*.

The following image shows the Join settings window where you select fields from the Host field and the Target field lists to create a join.



3. Select the fields you want to join from the Host field list and the Target field list and add them to their respective Selected Fields boxes.

or

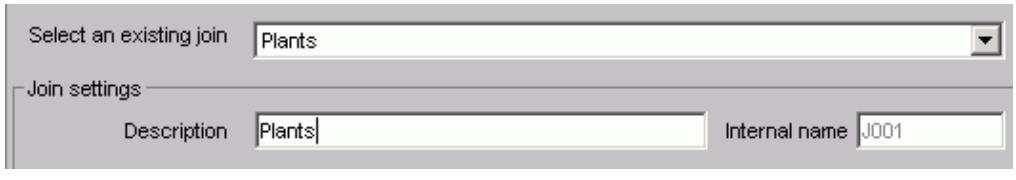
Press *Alt+T* to go to the Target Fields list. Tab to the field and press *Enter* to add the chosen field to the its Selected Fields box.

Note: Fields must have the same format and be indexed fields in order to use them to create joins.

4. If you want to see the join syntax, click *View* to open a new window that displays the join syntax as shown in the following image.

5. Click *OK*.

6. Give the join a meaningful and unique name in the Description box, for example, Plants as shown in the following image.

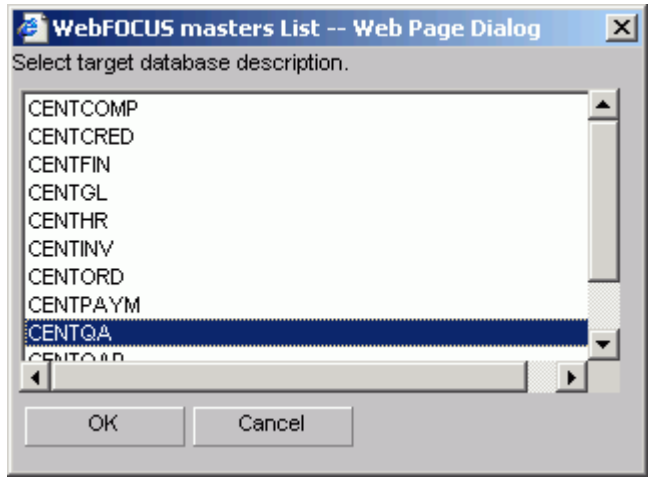


7. Click *Save & Create*. The new join appears in the Joins list.

Procedure: How to Create a Define-based Join

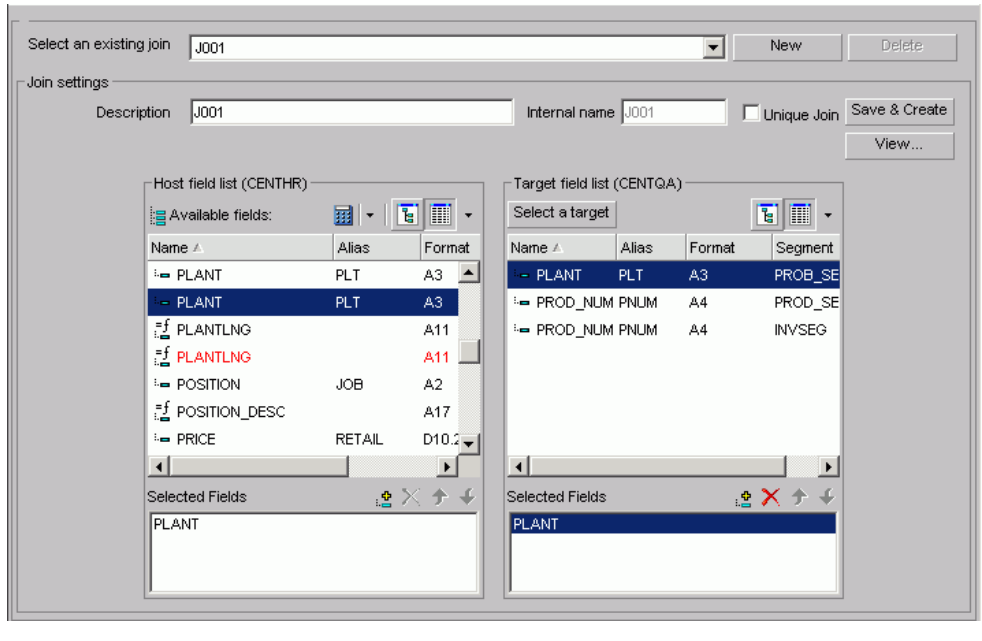
1. Click the Join options tab in Report Assistant or Graph Assistant and click *New*.

   The WebFOCUS masters list dialog box opens where you select a target data source.



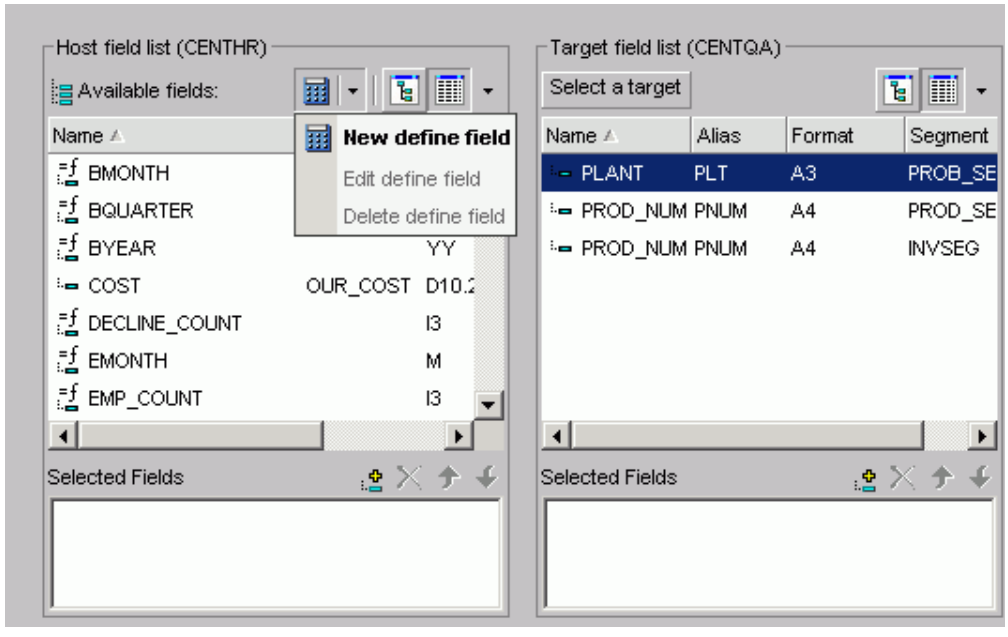
2. Select a data source and click *OK*.

   The following image shows the Join settings window where you select fields from the Host field and the Target field lists to create a join.

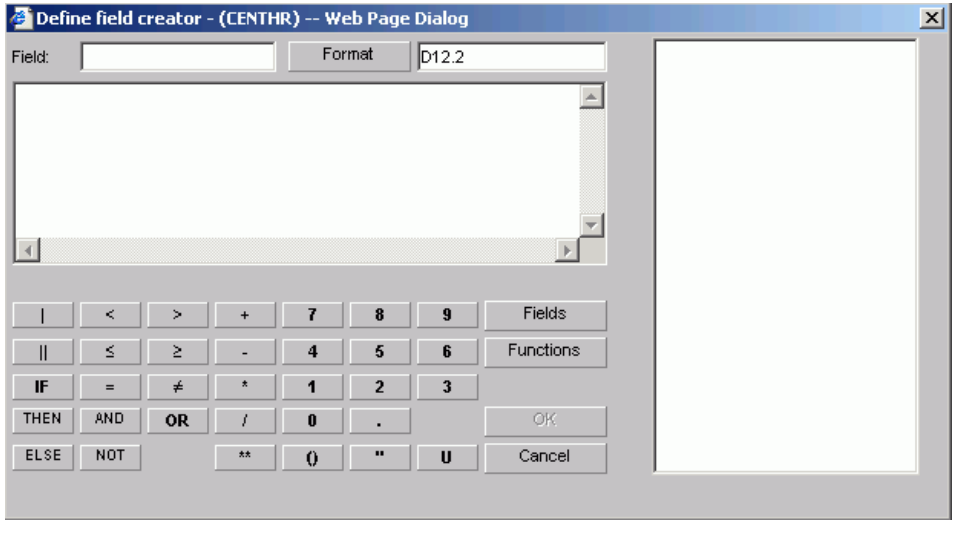


3. Click the down arrow of the Define icon and then click *New define field*.

The following image shows the list of Define field options.



The following image shows the Define field creator dialog box where you create the Define expression.

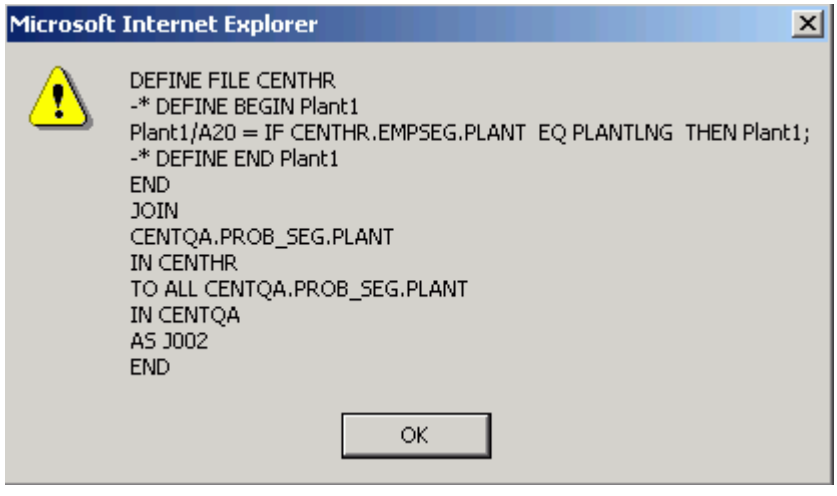


4. Create the defined field. The new define field appears in the Available fields list. The field is prefixed with the define symbol as shown in the following image.

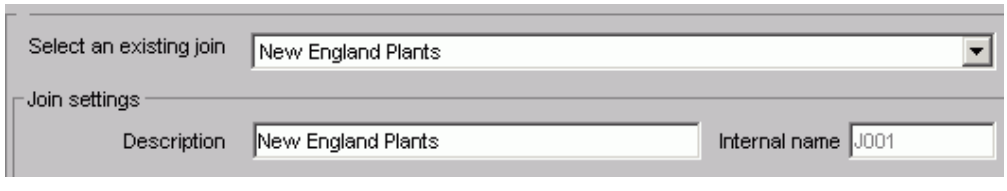
5. Add the defined field and the target field to their respective Selected Fields boxes.

   Note: Fields must have the same format and be indexed fields in order to use them to create joins.

6. If you want to see the syntax, click *View* to display the define-based join syntax as shown in the following image.



7. Give the join a meaningful and unique name in the Description box as shown in the following image.

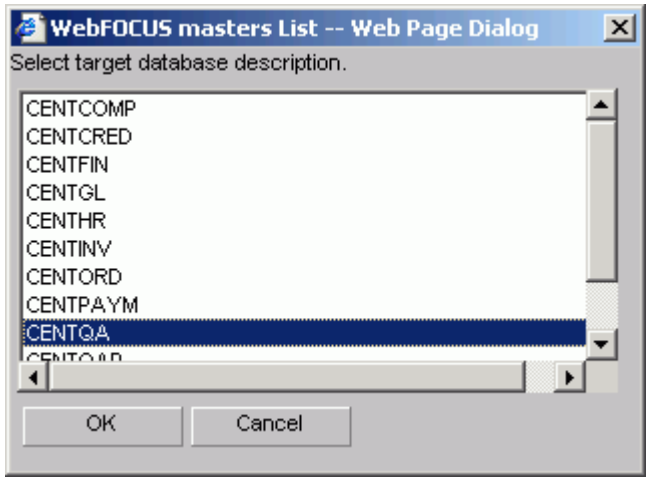


8. Click *Save & Create*. The new join appears in the Joins list.

Procedure: How to Create Multi-field Joins

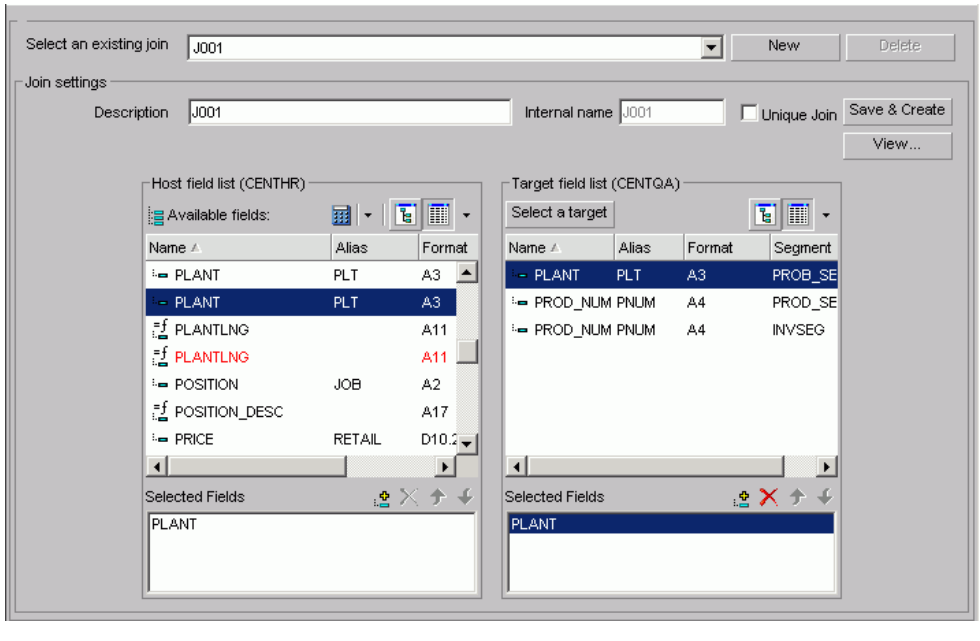
1. Click the Join options tab in Report Assistant or Graph Assistant and click *New*.

   The WebFOCUS masters list dialog box opens where you select a target data source.

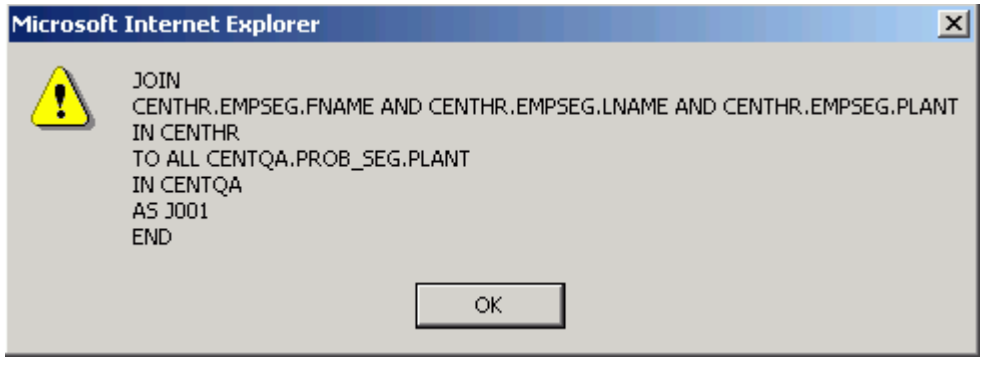


2. Select a data source and click *OK*.

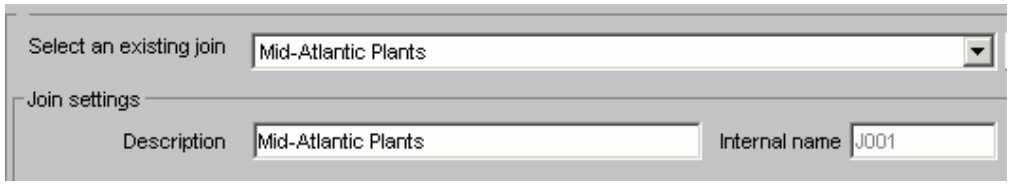
   The following image shows the Join settings window where you select fields from the Host field and the Target field lists to create a join.



3. Enter multiple fields in the Host field list box and one field in the Target field list box.
4. If you want to see the syntax, click *View* to display the multi-field join syntax as shown in the following image.



5. Give the join a meaningful and unique name in the Description box as shown in the following image.



6. Click *Save & Create*. The new join appears in the Joins list.

Procedure: How to Delete a Join

1. Select a join from the Select an existing join list box.
2. Click *Delete*.

Procedure: How to Edit a Join

1. Select a join from the Select an existing join list box.
2. Make your desired changes.
3. Click *Save & Create*.

HTML Report Assistant and Graph Assistant: Selection Criteria Features

In this section:

Creating a WHERE or WHERE TOTAL Statement

Combining Expressions

Grouping Expressions Together With Parentheses

How to:

Select Records Based on Values, Parameters, Fields, or a Constant

Create a Where Statement Using Date and Time Values

Combine Expressions

Delete an Active Expression

Group WHERE Statements Together Using Parentheses

When generating a report and specifying which fields to display, you may not want to show every instance of a field. By including selection criteria, you can display only those field values that meet your needs. In effect, you can select a subset of the data, which you can easily redefine each time you issue the report request.

When developing a report request, you can define criteria that select records based on:

- The values of an individual field (using a WHERE statement).
- The aggregate value of a field, for example, the sum or average of a field's values (using a WHERE TOTAL statement).

The Selection criteria tab enables you to create WHERE or WHERE TOTAL statements for record selection.

Creating a WHERE or WHERE TOTAL Statement

WHERE and WHERE TOTAL statements enable you to display only those records that pass your selection criteria. These statements select the data source records to be included in a report. The data is evaluated according to the selection criteria before it is retrieved from the data source. Use the Selection criteria tab to create a new WHERE or WHERE TOTAL statement.

Procedure: How to Select Records Based on Values, Parameters, Fields, or a Constant

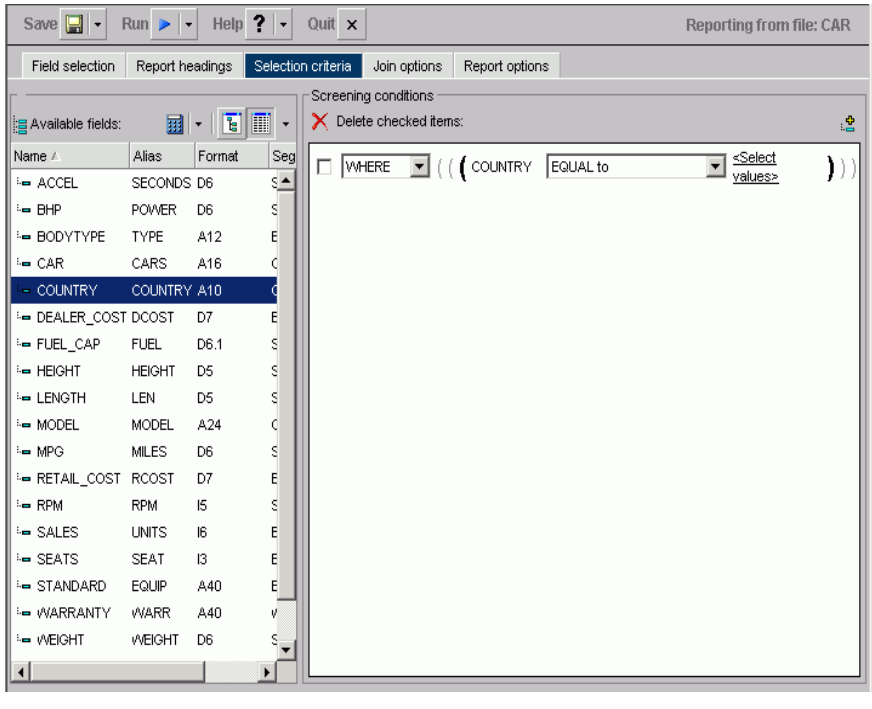
In the HTML Report or Graph Assistant,

1. Click the *Selection criteria* tab.
2. Select a field from the Available fields window and drag the field to the Screening conditions frame.

   or

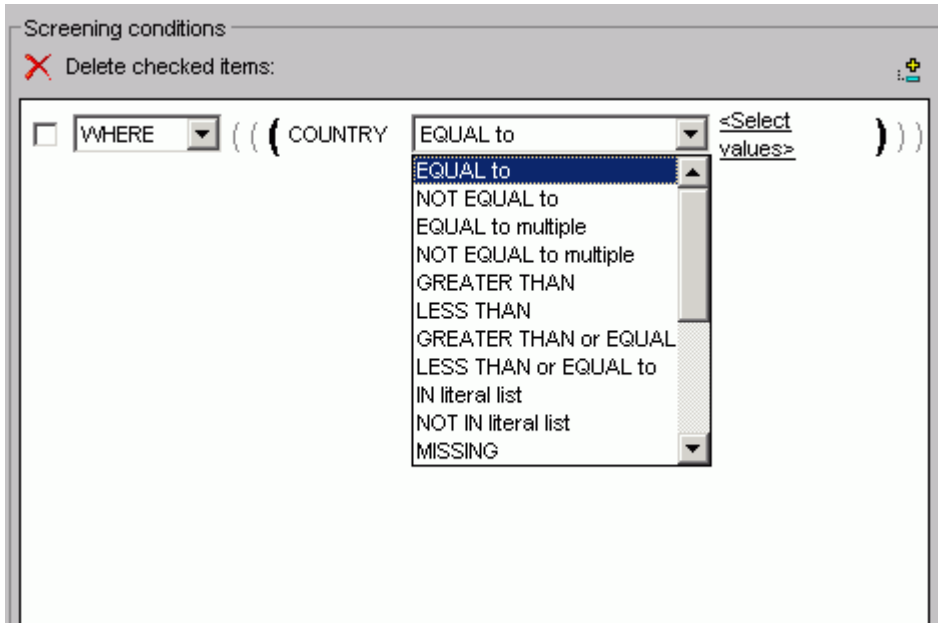
   Press *Alt+M* to go to the Available Fields window, tab to the field and press *Enter* to add the chosen field.

   The field name and Equal to and <Select values> appear in the Screening conditions frame. The following image shows the Selection criteria tab with the Available fields window on the left and the Screening conditions on the right with a beginning Where statement for the COUNTRY field.



3. Select *WHERE* or *WHERE TOTAL*.

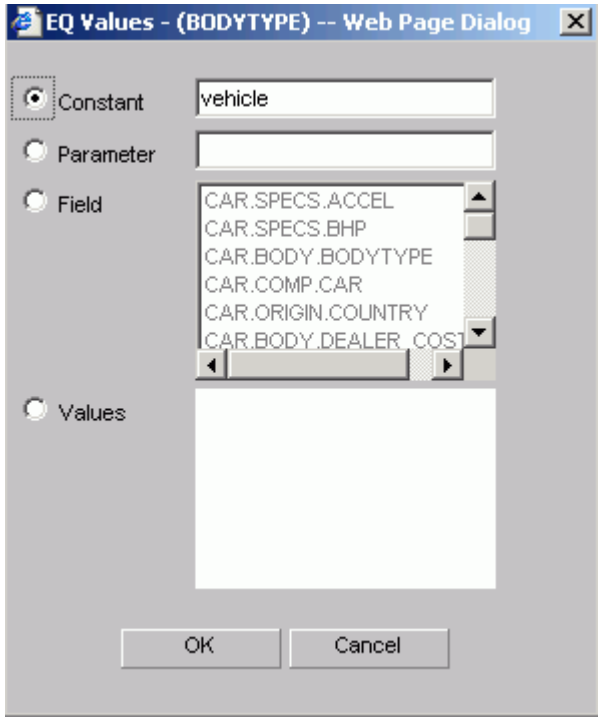
4. Click *Equal to* in the right frame to display a list of operatorsas shown in the following image.



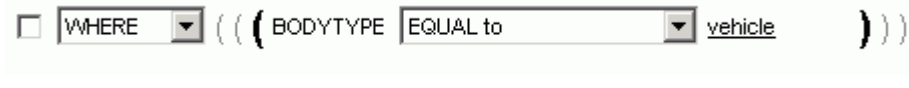
5. Click the expression of your choice.
6. Click <*Select values*> to complete the expression.

7. Select one of the following compare type radio button options:

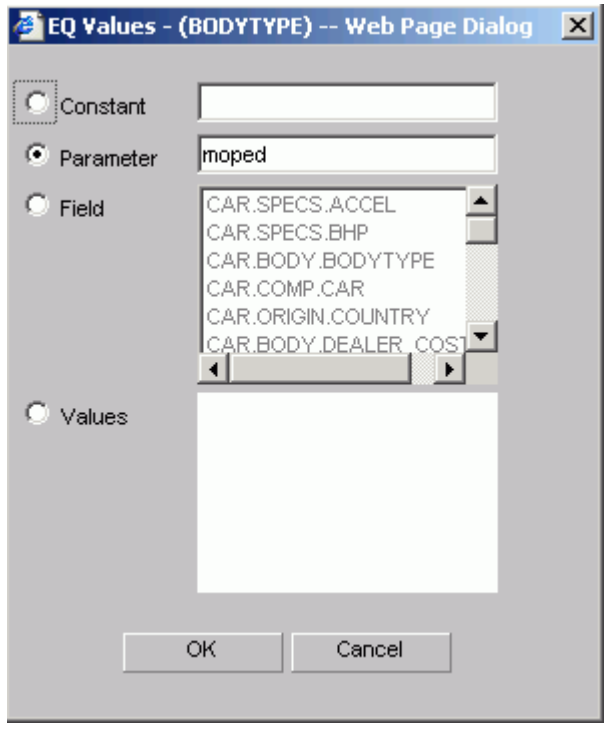
- **Constant.** Enter a value that will serve as a constant (a value that will not change). For example, enter vehicle as shown in the following image.



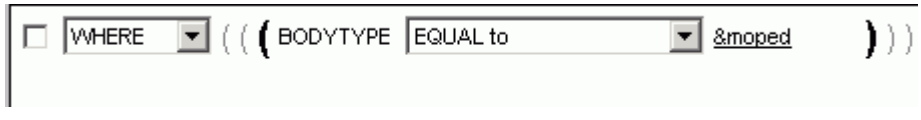
Once you click *OK*, the constant, vehicle, appears in the WHERE statementwhich reads BODYTYPE Equal to vehicle.



- **Parameters.** Enter the name of the &variable. For example, moped as shown in the following image with the Parameter radio button selected and the variable name entered as moped.

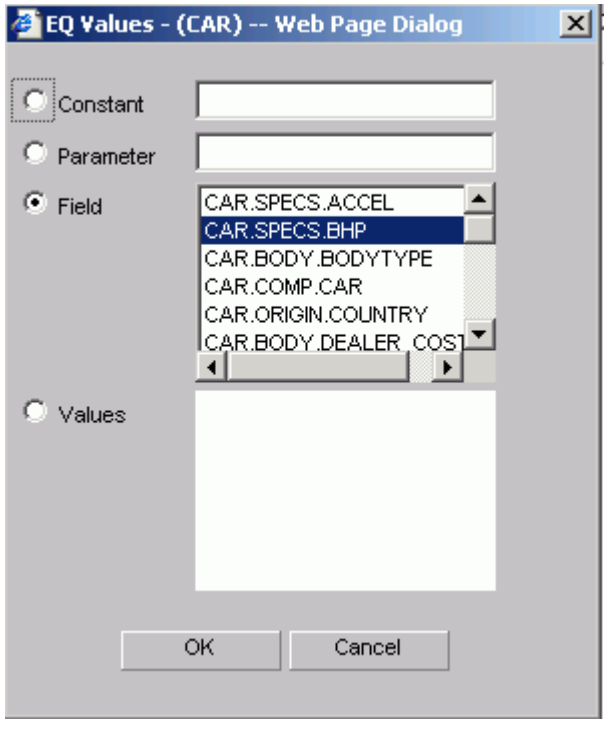


Once you click *OK,* the parameter, &moped, appears in the WHERE statement.

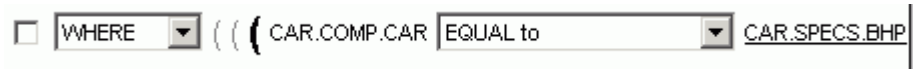


Note: The ampersand is automatically added by WebFOCUS.

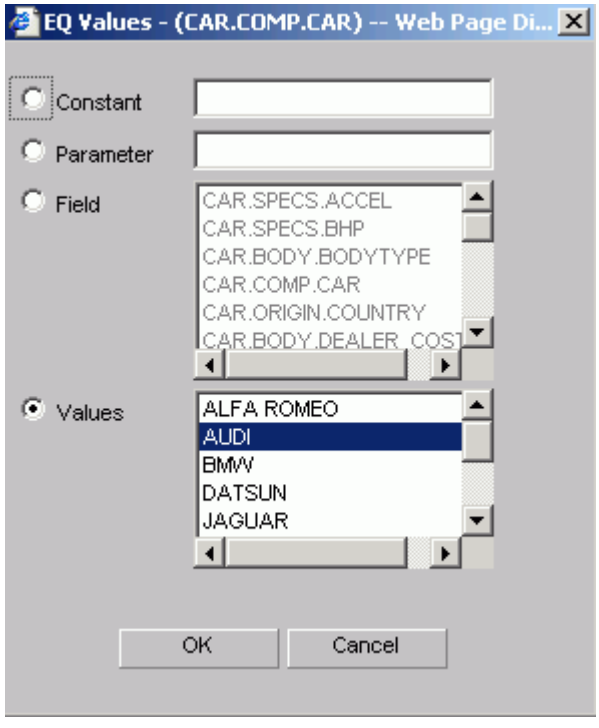
- **Fields.** Select a field from the list. For example, BHPas shown in the following image with the Fields radio button selected and CAR.SPECS.BHP selected.



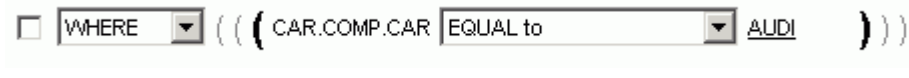
Once you click *OK*, the field BHP appears in the WHERE statementwhich reads CAR.COMP.CAR Equal to CAR.SPECS.BHP.



- **Values.** Select a value for the field you initially chose (in this case, car). For example, Audias shown in the following image with the Values radio button selected and AUDI selected as its value.



Once you click *OK,* the value, Audi, appears in the WHERE statementwhich reads CAR.COMP.CAR Equal to AUDI.



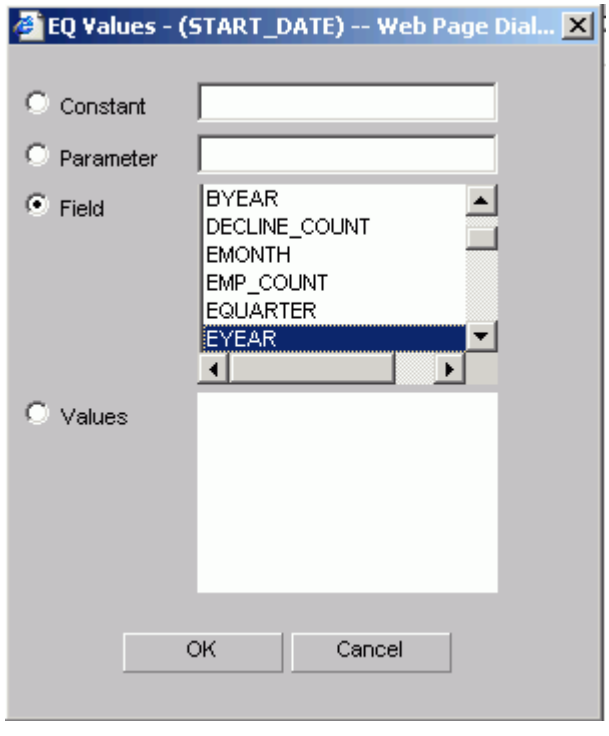
Procedure: How to Create a Where Statement Using Date and Time Values

In the HTML Report or Graph Assistant,

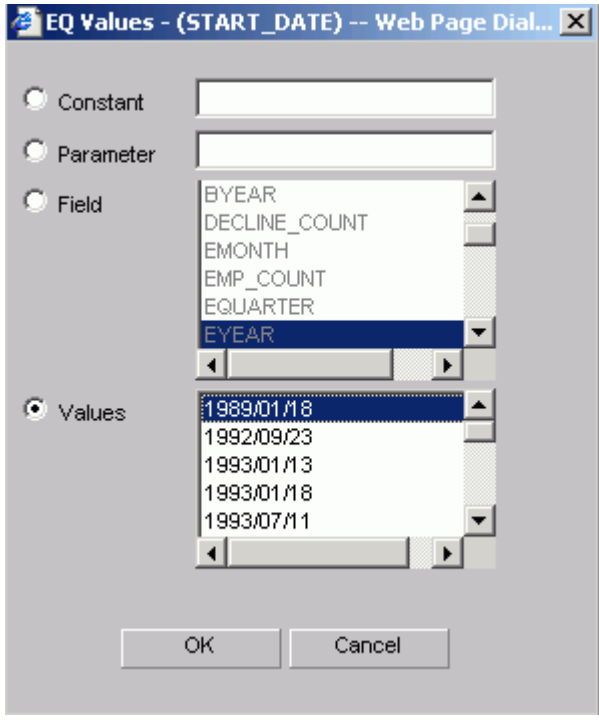
1. Click the *Selection criteria* tab.
2. Select a field from the Available fields window and drag the field to the Screening conditions frame.

   or

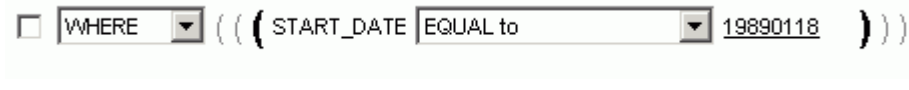
   Press *Alt+M* to go to the Available Fields window, tab to the field and press *Enter* to add the chosen field.
3. Click *Equal to* in the right frame to display a list of operators. Click the operator of your choice.
4. Click *<Select values>* to complete the expression.
5. Click *Field* to access date and time values for that field. For example, EYEAR as shown in the following image with the Fields radio button selected and EYEAR selected.



6. Click *Values* and click the value of your choice. For example, 1989/01/18as shown in the following image with the Values radio button selected and 1989/01/18 as its selected value.



Once you click *OK*, the value, 1989/01/18, appears in the WHERE statement which reads START_DATE Equal to 19890118.

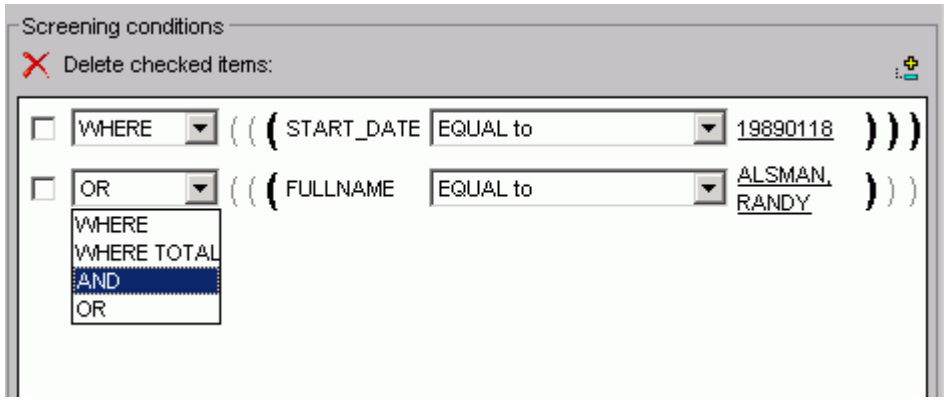


Combining Expressions

Use the right frame of the Selection Criteria tab to use or delete existing WHERE statements and to combine expressions.

Procedure: How to Combine Expressions

1. Create an expression.
2. When you create additional expressions, they are combined with the default operator AND as shown in the following image with two statement, the first being a WHERE and the second being an AND statement.



3. Toggle between AND, OR, WHERE, and WHERE TOTAL by clicking the AND to make your choice.

Procedure: How to Delete an Active Expression

1. Select the check box next to the expression you want to delete. Click the *Delete* icon above the box.
2. You are prompted to delete the expression. Click *OK* to delete.

Grouping Expressions Together With Parentheses

You can use parentheses to group expressions together to optimize the WHERE statement.

Procedure: How to Group WHERE Statements Together Using Parentheses

Click the grayed out parentheses to activate the parentheses and group expressions together.

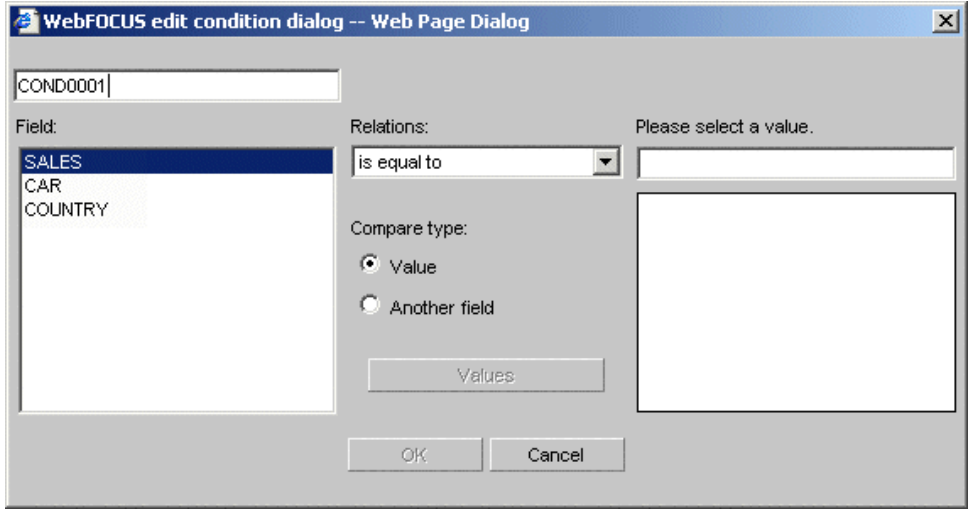
HTML Report Assistant and Graph Assistant: Styling Specified Fields

Use the Conditional Styling dialog box to style records based on specified field values. Conditional styling, also referred to as stoplighting, allows you to define conditions that determine when to apply particular fonts, point size, text style, foreground and background color, and drill down procedures to your report's data when the report is run.

You can style specified values for one or several column and sort fields. However, you cannot style values for sort across fields.

Procedure: How to Style Records Based on Specified Field Values

1. In the HTML Graph Assistant, if hidden, Click *Show report field options*.
2. Click the *Display* tab in the report field options section.
3. Click the *Conditional styling* button. The Conditional Styling dialog box opens.
4. Click the *Add* icon that is on the All box. The edit condition dialog box opens where you begin to set the conditional styling.

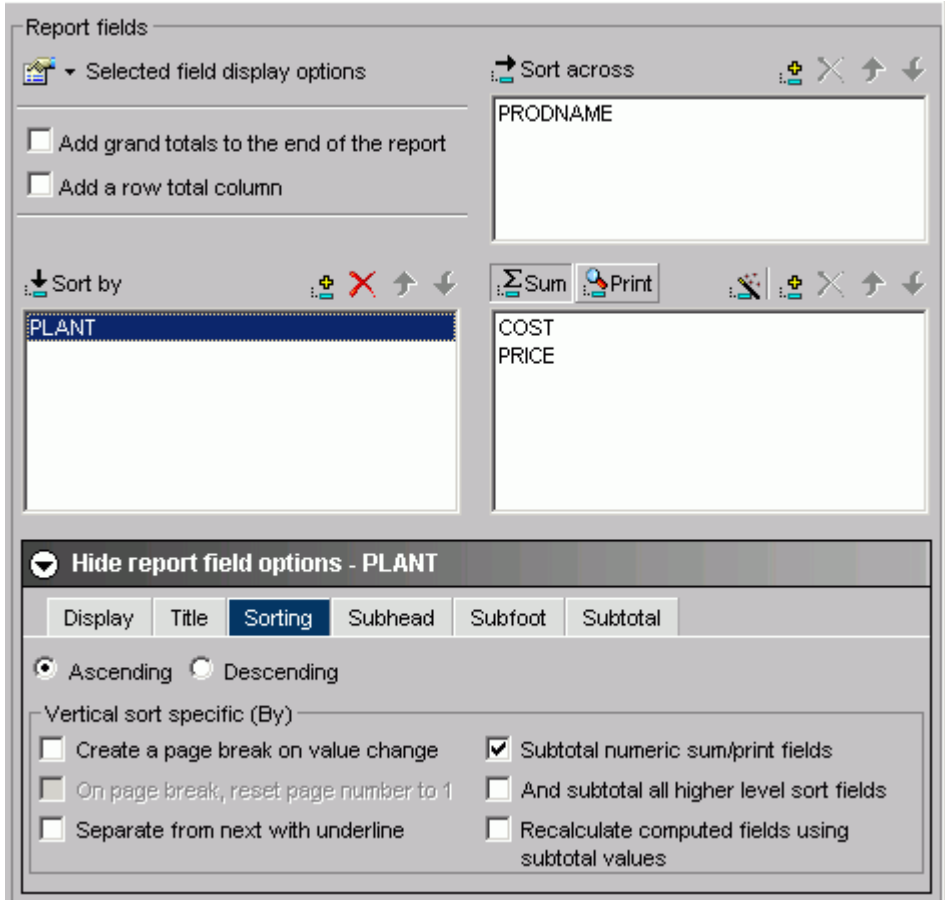


5. Provide a meaningful and unique file name in the Condition input box.
6. Select a field name from the Field list box and a relation from the Relations list box.

7. To specify a value that completes the relation, first select one of the following in the Compare Type radio button group:
   - *Value*, to compare the selected report field to a data source value or literal value.
   - *Another Field*, to compare the selected report field to the value of another field.
8. If you select Value under Compare Type, perform one of the following to complete the relation:
   - Click *Values* to display existing data source values in the Value list box, and select a value.
   - Type a literal value in the Value input box.
9. Click *OK*. You return to the Conditional Styling dialog box.
10. Select the newly created condition in the list box. The condition statement appears in the When box.
11. Click the *Add* icon on the Attached box.
12. Click *Font*. The Styles dialog box opens.
13. Select the desired font characteristics.
14. Click *OK*. You return to the Conditional Styling dialog box. The specified styling options are reflected in the Text appears as box.
15. Click *OK* to return to the Field selection tab.

HTML Report Assistant: Subtotal, Sub-total, and Recalculate

In the Field selection tab, Sort by fields can be subtotaled, sub-totaled, or recalculated with subtotaled values by checking the appropriate check box in the Sorting tab, which appears for the given Sort by field in the *Show report field option*s box.



Note:

- *Subtotal numeric sum/print fields* is checked by default. You can also use the sub-total command by checking *And subtotal all higher level sort fields*.
- Subtotal displays a subtotal only when the specified sort field changes value. Sub-total displays subtotals for numeric values when the Sort by field changes value and for any higher-level Sort by fields when their values change. You can also recalculate all computed fields by using the subtotal or sub-total values.

HTML Report Assistant: Warning Message in Heading

A warning is issued to indicate to the user that the report they are viewing is only a subset of the actual data. This occurs when either Record limits or Read limits are checked in the Properties tab, under "Warning message displayed in Heading."

The edit box that states "This report is only a subset of the data" is checked by default. You can deselect the check box for this message or design a new message. Either message will appear in the heading of the report.

HTML Report Assistant: New Display Formats

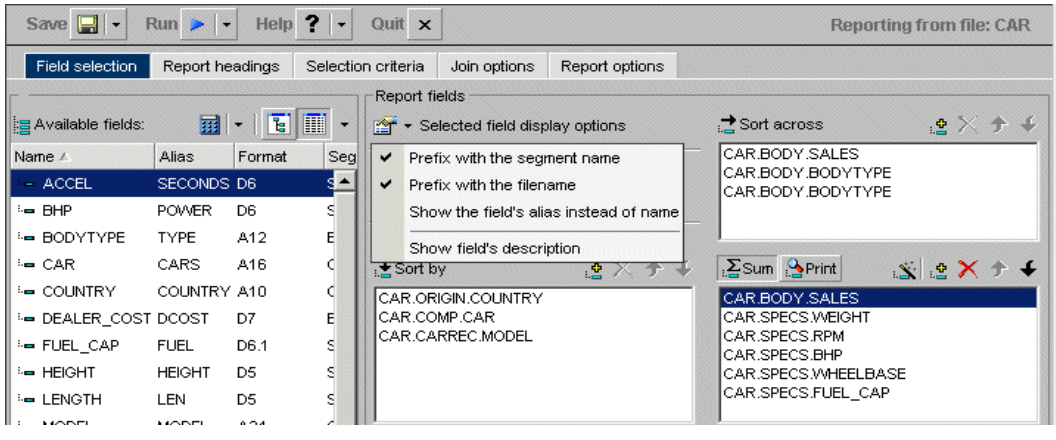
The HTML Report Assistant includes the formats Excel with Formula and eXtensible Markup Language (XML).

HTML Report Assistant: Fully Qualified Field Names

The HTML Report Assistant always saves a procedure with its fully qualified field name. If you want to view this information, click the Prefix with the segment name and Prefix with the filename options in the Report Fields section of the Field selection tab.

Example: Viewing Fully Qualified Field Names

Prefix with the segment name and Prefix with the filename are checked. Note that the fields under Sort by demonstrate the field, segment, and filenames.



HTML Graph Assistant: Auto Arrange Feature

How to:

Arrange the Elements of a Graph Efficiently

Example:

Comparing the Arrangement of the Elements of a Graph

The auto arrange feature enables the Graph Preview to arrange all the elements in a graph report efficiently. The auto arrange feature is checked by default.

Procedure: How to Arrange the Elements of a Graph Efficiently

Check the *Automatically arrange the chart elements so that they make the best use of the available space* option.

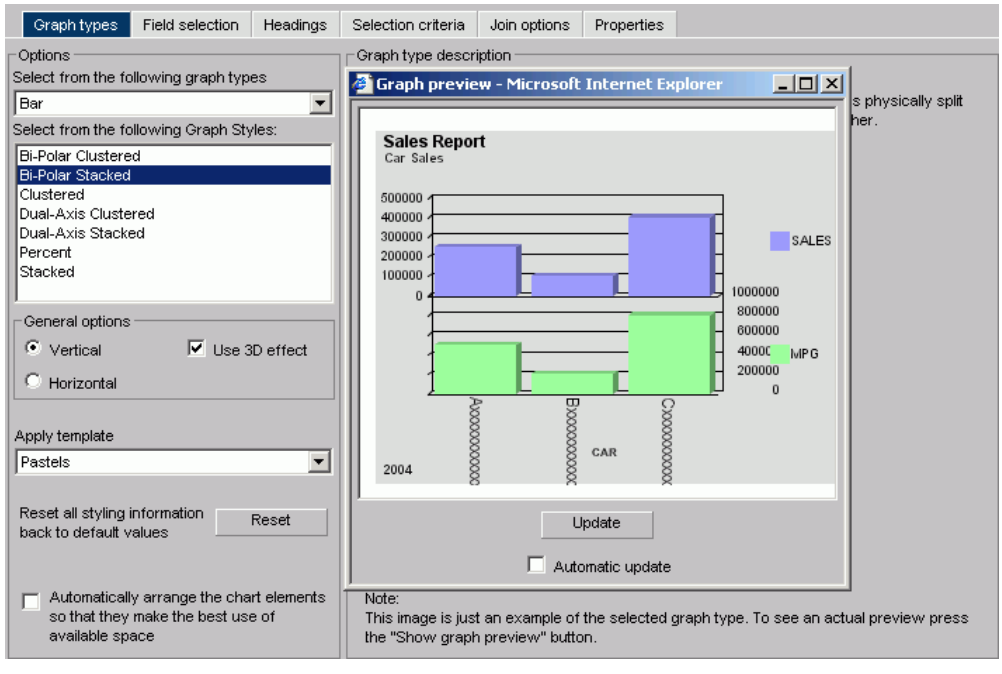
Note: This option is checked by default. If you uncheck this feature, WebFOCUS will arrange the elements.

Example: Comparing the Arrangement of the Elements of a Graph

In the Graph types tab:

1. Uncheck the *Automatically arrange the chart elements so that they make the best use of the available space* option.
2. Click *Show Graph Preview.*

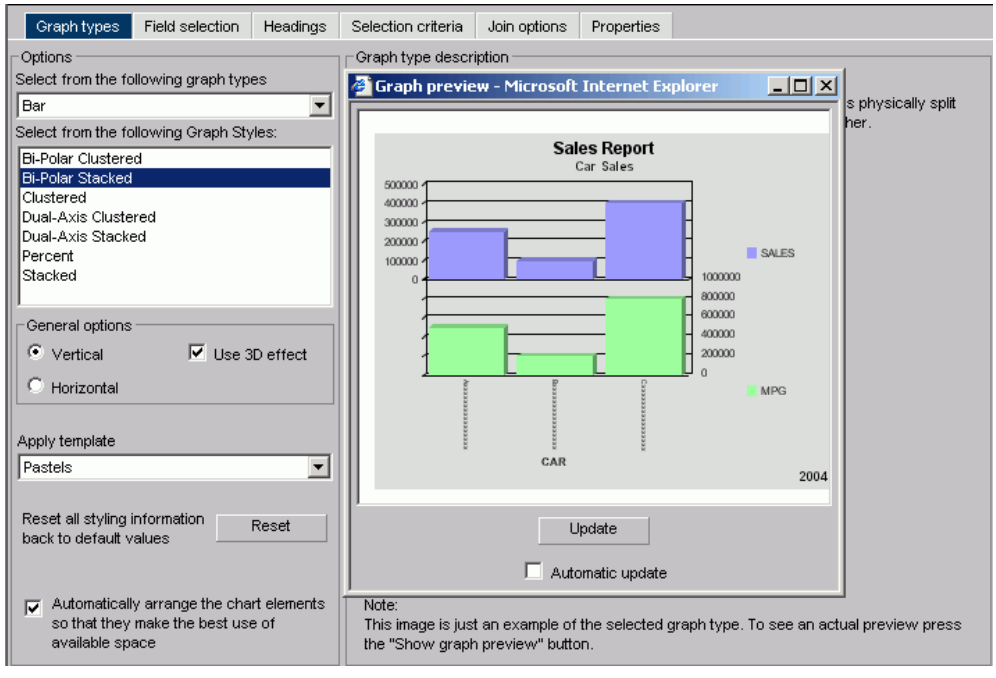
   The Graph preview window opens.



Note how the MPG symbol partially blocks the data along the right Y-axis.

3. Now check the *Automatically arrange the chart elements so that they make the best use of the available space* option.

   A new Graph preview window opens.



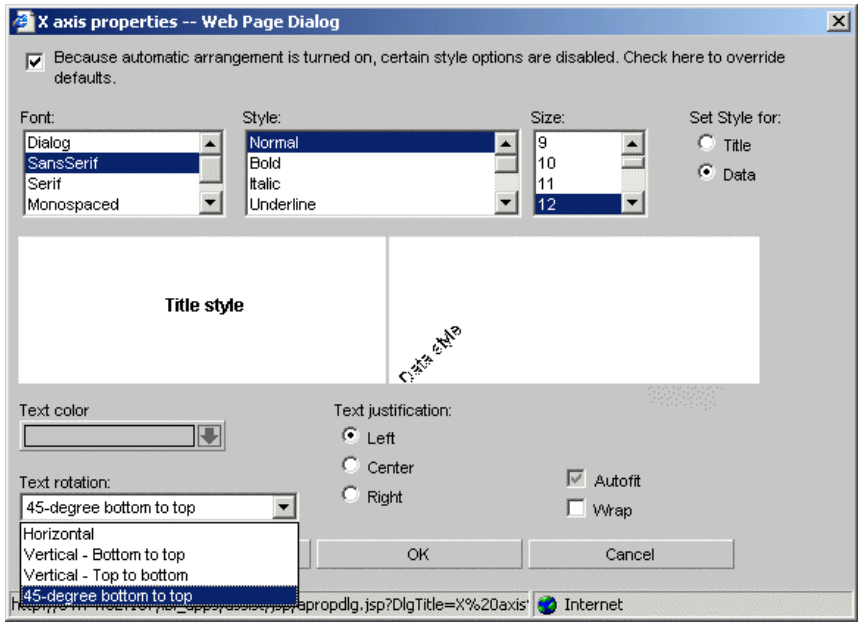
   Note how the Y-axes labels and X-axis labels fit within the size of the report.

HTML Graph Assistant: Text Rotation

A text rotation feature in the X-axis properties dialog enables you to design Data Style labels horizontally, vertically (from top to bottom or from bottom to top), and at a 45-degree angle.

Procedure: How to Arrange X Axis Property Data Styles

1. Click the Properties tab and then the *X axis* tab.
2. Click the *Style labels* button to open the X-axis properties dialog box.
3. To enable the text rotation features, select the check box at the top of the X axis properties dialog box as shown in the following image:



4. Under Text rotation, choose one of the following:

- Horizontal
- Vertical - Bottom to top
- Vertical - Top to bottom
- 45-degree bottom to top

  In this case, 45-degree bottom to top is highlighted. Accordingly, the Data Style label is positioned at a 45-degree angle.

HTML Graph Assistant: Graph Types and Graph Styles

Some of the Graph Types include: Multi-y, Waterfall, and Miscellaneous. In addition, several new Graph Styles are available for the Special Graph Type.

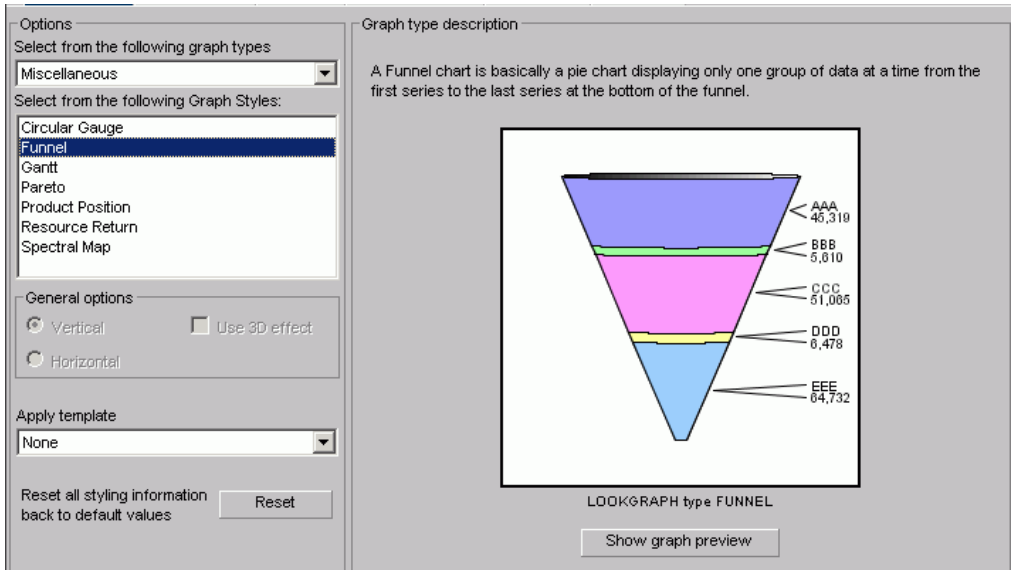
All Graph Types and Graph Styles can be selected from their respective drop-down lists in the Graph Types tab. When you begin the process of creating a graph, the first thing you do is choose a Graph Type and then a corresponding Graph Style.

The following window shows the Miscellaneous Graph Type and a sample Spectral Map Graph Style:

- **Multi-y.** A Multi-y is a vertical, triple/quadruple/quintuple-Y-axis clustered bar chart. Any series can be assigned to any of the triple/quadruple/quintuple axes.
- **Waterfall.** A Waterfall chart is a cumulative stacked chart. The waterfall chart will automatically perform the cumulative sum when using Subtotal or Total. Waterfall charts essentially require one data value for each series or group marker to be drawn in a chart.
- **Miscellaneous.** The Miscellaneous Graph Type includes a variety of Graph Styles:

- **Default (Spectral).** This is a Spectral Map Chart. This is a chart with row or column matrix of markers that are colored according to data values.
- **Funnel.** A Funnel Chart is basically a pie chart displaying only one group of data at a time from the first series to the last series at the bottom of the funnel.
- **Gauge1.** A Gauge Chart usually indicates the current position of a value within a given spectrum.
- **Pareto.** The X-axis scale is for the group members. The Y-axis scale is the percent of the total accumulation for each selected series.
- **Resource Report.** Resource charts plot X- and Y-axis data cumulatively. They are useful for plotting two independent variables against each other, particularly in cases where one or both of the axes specify percentages and the user wants to examine issues such as capacity utilization.
- **Product Position.** A Product Position chart provides a visual representation of market share and growth versus revenue and measurement (past, present, and future). Product Position charts require a set of three display fields.

The following Miscellaneous Graph Type uses a Funnel Graph Style:



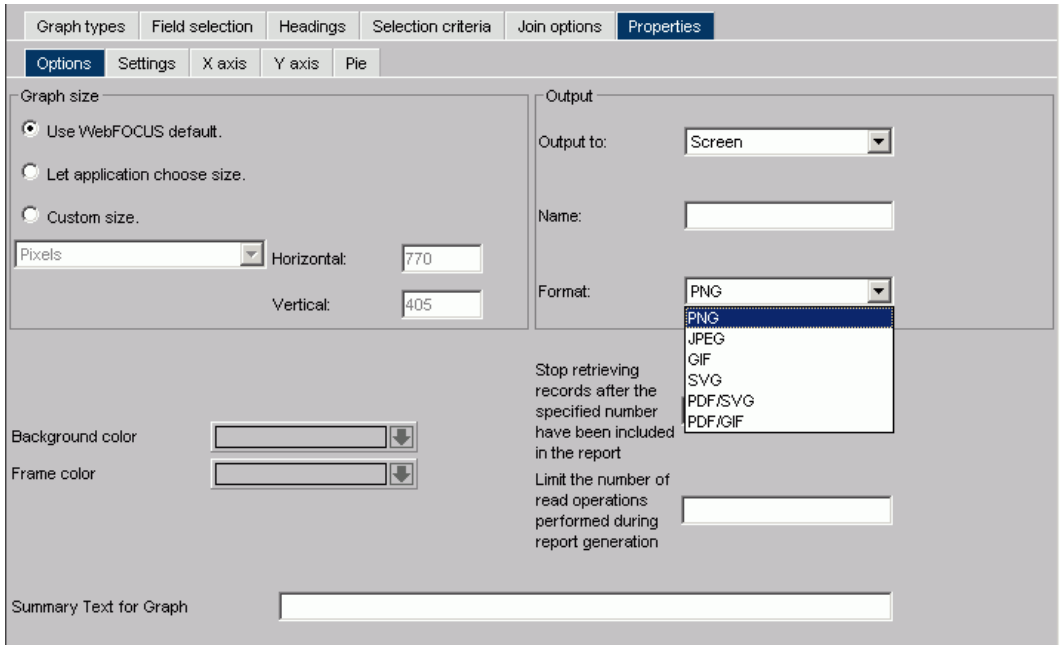
HTML Graph Assistant: Graph Display Formats

- PNG (Portable Network Graphics). PNG graphs are bit mapped and can support 16 million colors. In addition, PNG graphs have lossless compression (data is decompressed 100% back to the original). Therefore, saving, altering, and resaving a PNG does not degrade its overall quality. The PNG graph displays in the browser.
- GIF (Graphics Interchange Format). GIF compresses well but only supports 256 colors. The GIF graph displays in the browser.
- JPEG (Joint Photographic Experts Group). A compressed file format.
- SVG (Scalable Vector Graphics). SVG is a text-based graph file format that enables Web application developers to design powerful, interactive graphs. SVG is compact and generates high quality images on any media regardless of resolution. The SVG is viewable with an Adobe plug-in.
- PDF/SVG (Portable Document Format/Scalable Vector Graphics). The SVG graph is automatically embedded into a PDF and shown only on the screen. Drill down is not available with this format.
- PDF/GIF (Portable Document Format/Graphics Interchange Format). The GIF graph is automatically embedded into a PDF and shown only on the screen. Drill down is not available with this format.

Reference: Choosing Formats for Output to the Screen, a File, or Printer

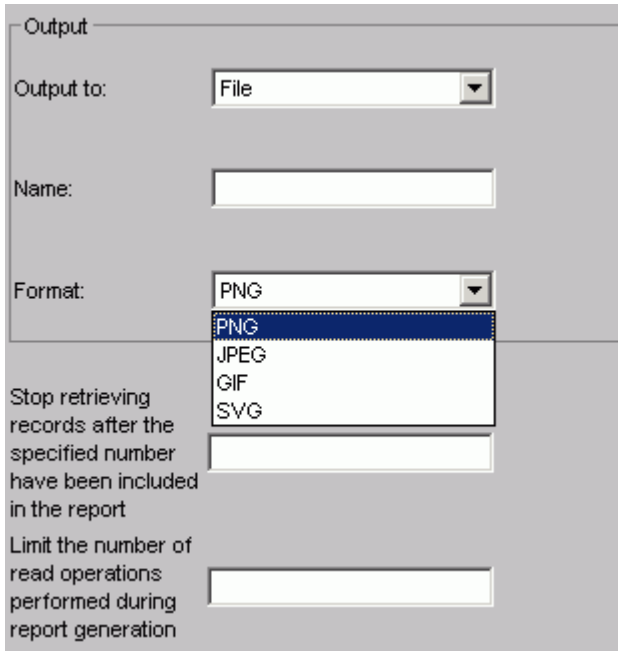
When you create or edit a graph in Graph Assistant, you can choose among these formats in the Output section in the Options tab. If you are designating Output To the Screen, all options listed above are available, as shown in the Format drop-down list.

The following image shows the Options subtab.



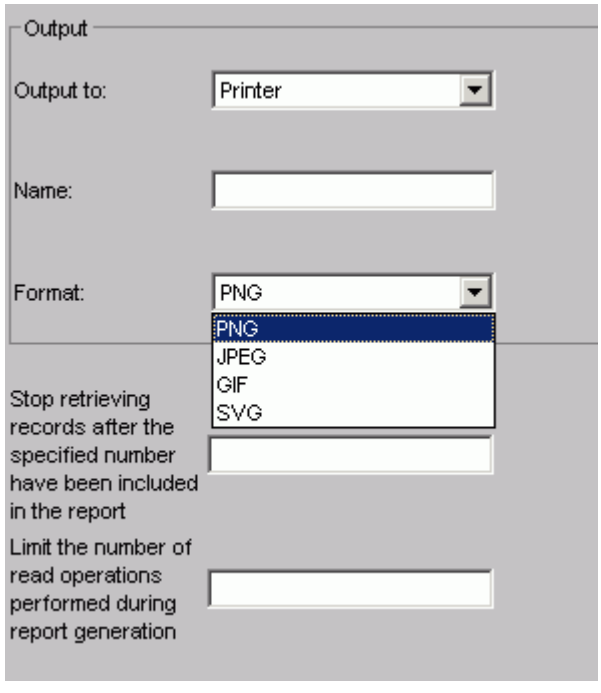
If you are designating Output to File, the PNG, JPEG, GIF, and SVG options are available, as shown in the Format drop-down list.

The following image shows the Output section of the Options subtab with the *Output to File* option selected.



If you are designating Output to a Printer, the PNG, GIF, and SVG options also are available, as shown in the Format drop-down list.

The following image shows the Output section of the Options tab with the *Output to Printer* option selected.



OLAP Features

In this section:

Saving Options

Uniform Field Name Referencing in OLAP

How to:

Save a Custom Report in OLAP

Save Standard Reports and Other Files in OLAP

Save an OLAP-enabled Report as a Plain Report Without OLAP Functionality

WebFOCUS includes several saving features for OLAP reports:

- The dialog for saving reports allows them to be placed in subfolders of the user's choice under My Reports; subfolders can also be created from the OLAP tool.
- Administrators and Developers can save their reports in the Standard Reports or Other Files folders by creating subfolders on the fly.
- Users can save their reports with the OLAP functionality removed, so the OLAP tool can serve as a simple report writer tool.
- Field name referencing is uniform throughout the OLAP product. For example, the AS or TITLE phrases will appear in reports generated using the OLAP Selections pane or the OLAP Control Panel (OCP).

Saving Options

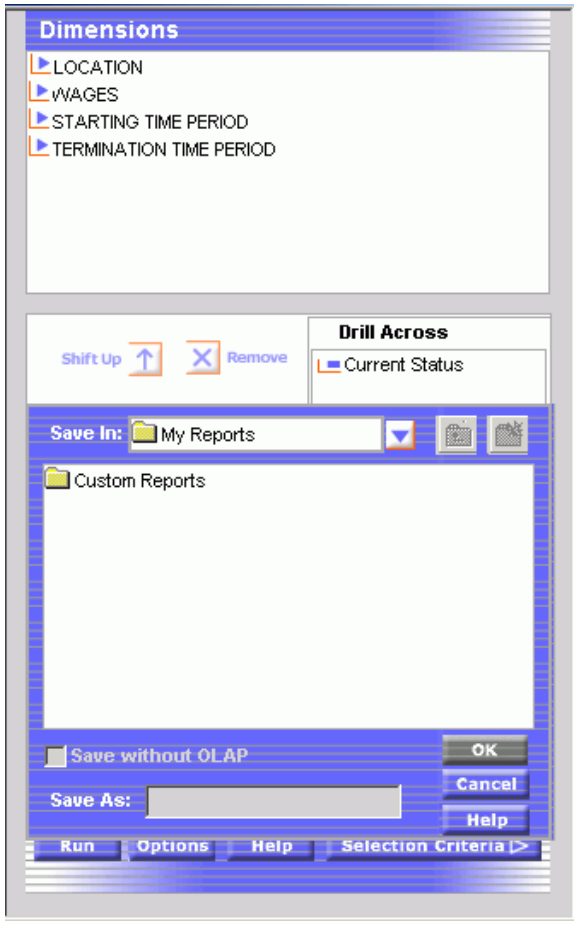
If you are working in the OLAP Selections pane, you can save your report by using the Save button on the toolbar. You can also access other saving options in the OCP by selecting the Options button.

Procedure: How to Save a Custom Report in OLAP

1. Click the Save button in the OLAP Selections Pane.

or

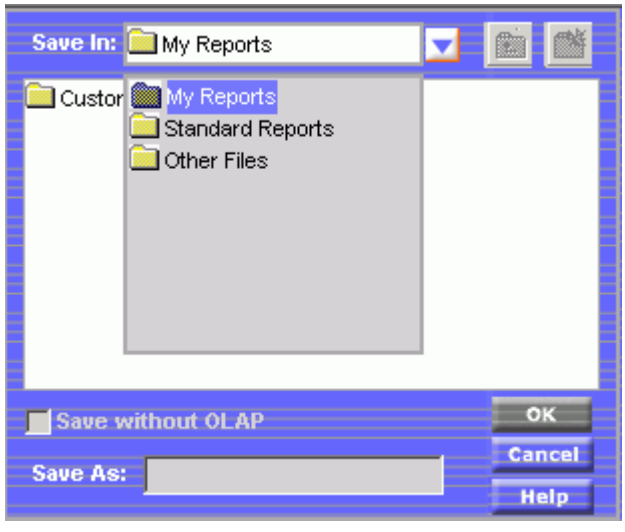
Click the *Options* button in the OLAP Control Panel (OCP).



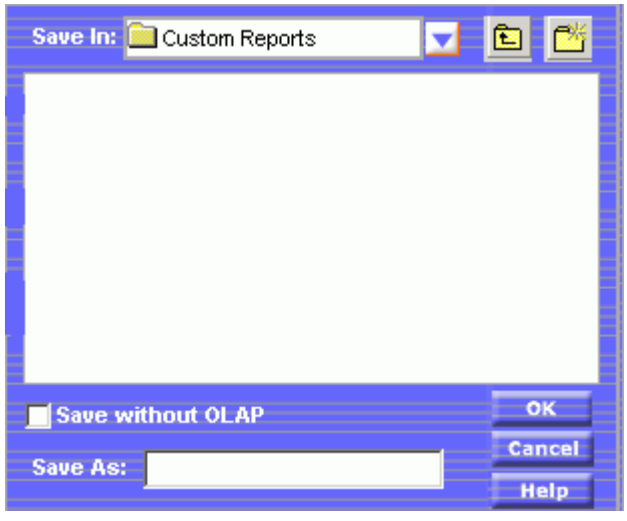
You are now presented with several saving options.

Save the data in an Excel file
Save the data in an Excel 2000 file
Save the data in an Excel 2000 file with formulas
Display as a PDF Report
Save Report

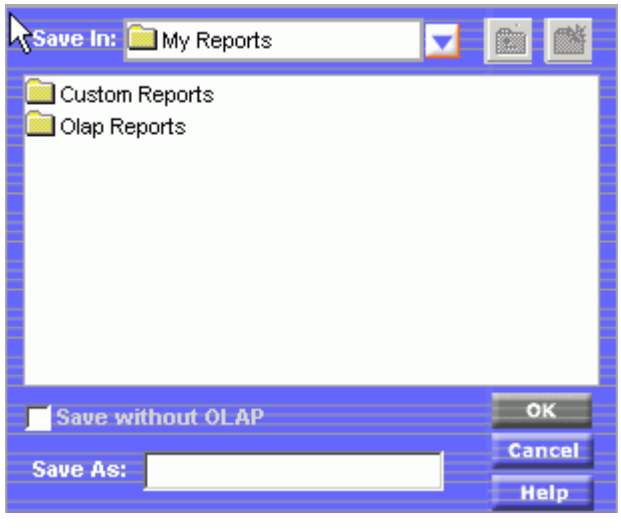
2. Click *Save Report* to open a new dialog box.



3. Click *My Reports* and then *Custom Reports* to enable the New Folder icon in the upper right corner.



4. A pop-up prompts you to create a new folder, for example, a subfolder called OLAP Reports.

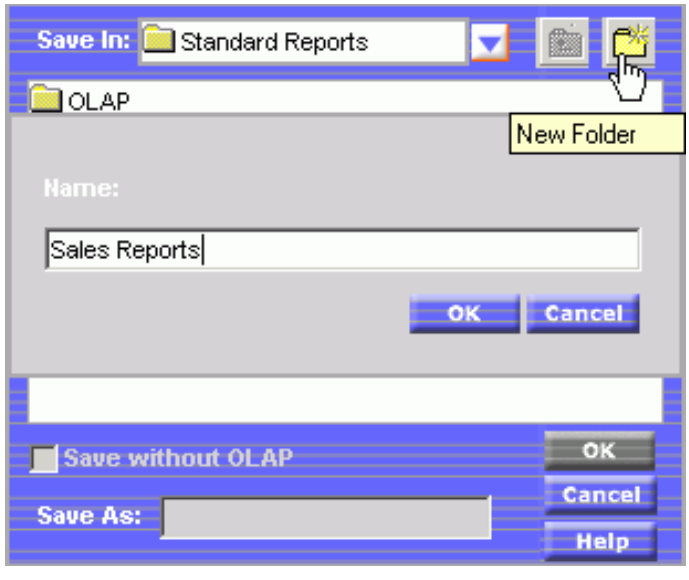


5. Name your report in the Save As box and click *OK* to return to your report.

Procedure: How to Save Standard Reports and Other Files in OLAP

Administrators and Developers can save their reports in the Standard Reports or Other Files folders by creating subfolders in this dialog.

1. Click the *Save* button in the OLAP Selections pane or click the *Options* button in the OCP.
2. Click *Save Report*.
3. Click either *Standard Reports* or *Other Files* from the drop down list.
4. Click the *New Folder* icon in the upper right corner of the dialog box.



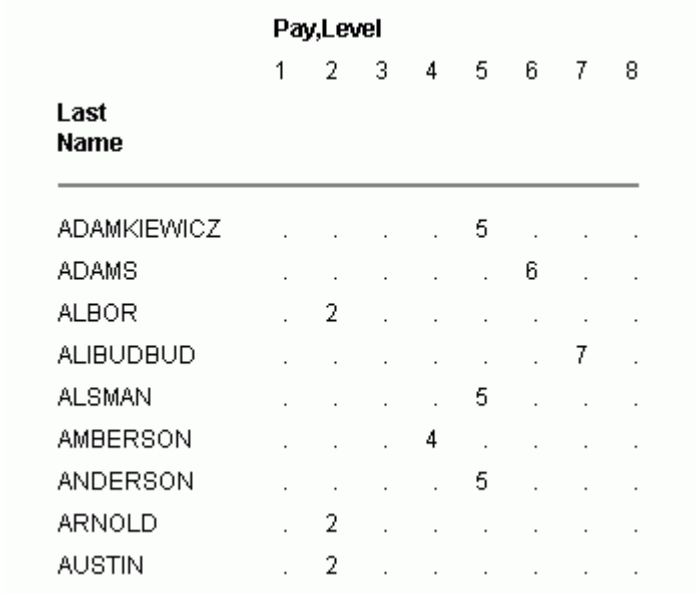
5. Enter the name, for example, Sales Reports, in the Name field.
6. Click *OK* to return to the OLAP Selections pane or the OCP.

Procedure: How to Save an OLAP-enabled Report as a Plain Report Without OLAP Functionality

Users can save their reports with the OLAP functionality removed, so the OLAP tool can be used as a simple report writer tool.

1. Create a subfolder by following the procedures: *Save a Custom Report in OLAP* on page 4-38 or *Save Standard Reports and Other Files in OLAP* on page 4-41.
2. Once a subfolder is selected, check the *Save without OLAP* box.
3. Enter a new name for your report in the *Save As* box and click *OK*.

WebFOCUS generates a new report without OLAP functionality.



	Pay,Level							
	1	2	3	4	5	6	7	8
Last Name								
ADAMKIEWICZ	.	.	.	.	5	.	.	.
ADAMS	.	.	.	.	.	6	.	.
ALBOR	.	2	.	.	.	.	.	.
ALIBUDBUD	.	.	.	.	.	.	7	.
ALSMAN	.	.	.	.	5	.	.	.
AMBERSON	.	.	.	4	.	.	.	.
ANDERSON	.	.	.	.	5	.	.	.
ARNOLD	.	2	.	.	.	.	.	.
AUSTIN	.	2	.	.	.	.	.	.

Uniform Field Name Referencing in OLAP

However the developer designs the report with regard to field referencing will carry through to both the OCP and the OLAP Selections pane. Field referencing does not differ between the report and the OCP and OLAP Selections pane. Field references by AS, TITLE, or Field Name, are uniform in the report output and OLAP controls.

CHAPTER 5

ReportCaster Enhancements

Topics:

- Migrating the ReportCaster Configuration File
- Migration of Daily Jobs
- Informix and Sybase Support
- Configuring Access to the User Interfaces Using the WebFOCUS Administration Console
- Configuration Tool Settings
- Development and Administration Interface
- HTML User Interface
- Customizing the Dynamic Language Switch in ReportCaster
- Report Library Content Compression
- Including Parameters and Burst Values in an E-mail Subject Line
- Automatically Deleting Distribution Files
- Report Formats
- &ECHO and -TYPE Support in Log Reports
- PDF Drill Through Support
- ReportCaster Bean and Web Services API

This chapter describes new features for ReportCaster in Version 5 Release 3.

Migrating the ReportCaster Configuration File

Migration for the ReportCaster configuration file (dserver.xmls) between Version 5 Release 2.x and Version 5 Release 3 is seamless. You can automatically convert the old version to the new version using the ReportCaster Server Configuration tool.

Procedure: How to Migrate the ReportCaster Configuration File

1. Back up your Version 5 Release 3 dserver.xmls file.
2. Copy your Version 5 Release 2.x dserver.xmls file to the Version 5 Release 3 directory.
3. Access the ReportCaster Server Configuration tool. Change the settings to reflect your Version 5 Release 3 environment. In particular, be aware of the following settings:
   - Repository URL (located on the Default tab)
   - Console Port (located on the Default tab)
   - Library URL (located on the Library tab)
   - Repository Node (located on the MRE Info tab)

   Note: If you plan to use Version 5 Release 2.x and Version 5 Release 3 releases simultaneously (not recommended), you must change the Repository URL setting to point to the appropriate ReportCaster environment. The ability to have multiple ReportCaster releases pointing to the same ReportCaster Repository is not supported.
4. Start the ReportCaster Distribution Server so that all updates are recognized by ReportCaster.

This completes the migration of the ReportCaster configuration file.

Migration of Daily Jobs

Jobs scheduled as 'Daily' that also specify a day or days of the week will continue to work as is. During migration, these types of jobs will be changed to read 'Weekly'. However, the behavior will not change.

Informix and Sybase Support

The ReportCaster Repository has been successfully tested for the following databases:

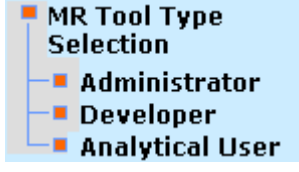
- Sybase Version 12 and Version 12.5 on UNIX.
- Informix Version 9.3 on Windows and UNIX.

Configuring Access to the User Interfaces Using the WebFOCUS Administration Console

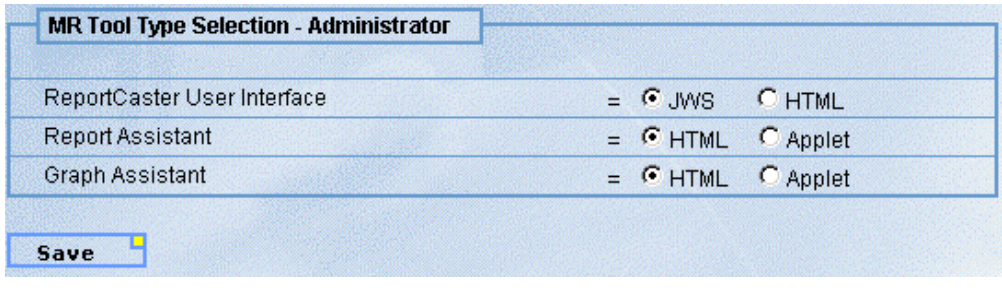
Previously, Managed Reporting Developers and Administrators could be configured to access the ReportCaster Scheduling Wizard and HTML User Interface, rather than the Java Web Start-based ReportCaster Development and Administration Interface, by manually editing files. In Version 5 Release 3, this configuration may be performed using GUI tools provided in the WebFOCUS Administration Console.

Procedure: How to Change the ReportCaster User Interface

1. On the left side of the screen, click *Utilities*. The MR Tool Type Selection options appear:



2. Select Administrator or Developer. The MR Tool Type Selection window appears with the Java Web Start (JWS)-based ReportCaster Development and Administration Interface selected by default:


MR Tool Type Selection - Administrator
ReportCaster User Interface = JWS HTML
Report Assistant = HTML Applet
Graph Assistant = HTML Applet
Save

   Note: The ReportCaster User Interface cannot be configured for Managed Reporting Analytical Users, who must use the HTML-based Scheduling Wizard and User Interface.

3. To change the interface to the ReportCaster Scheduling Wizard and HTML User Interface, select the HTML option button and then click Save to save your changes.

You must reload the WebFOCUS Web application in order for your changes to take effect. In addition, users must log out and log back in.

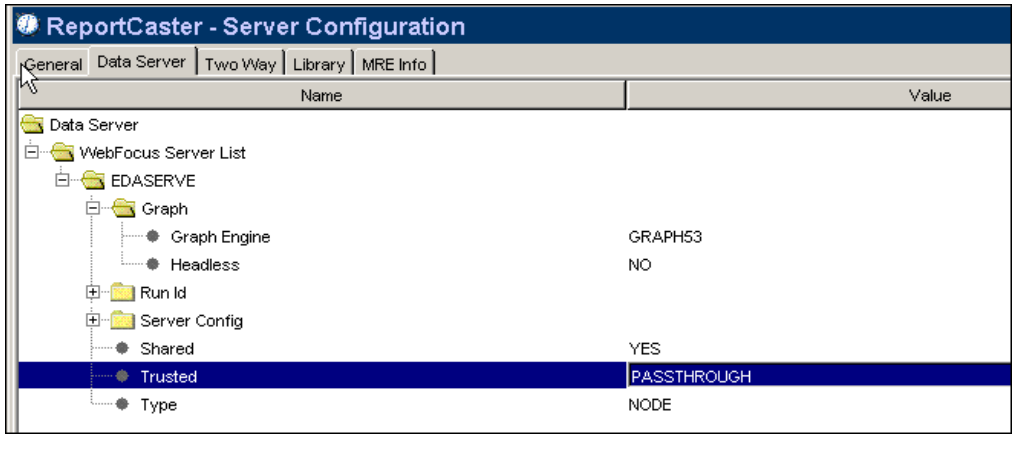
Configuration Tool Settings

Reference:

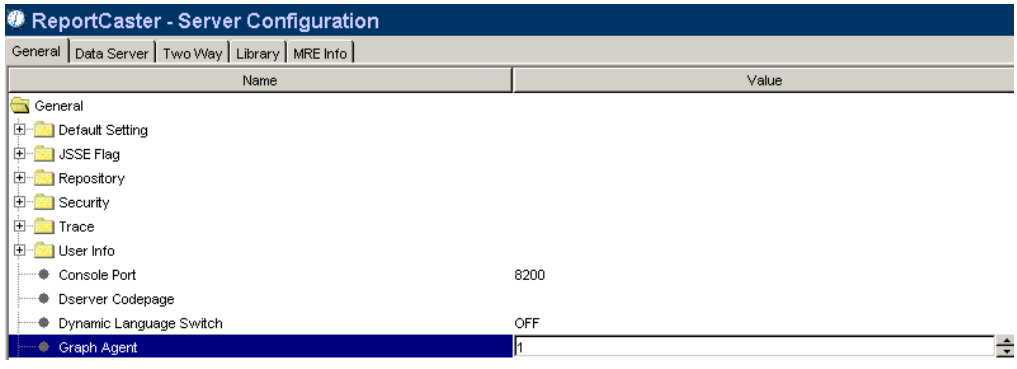
Additional Configuration Tool Settings

The following settings are available in the ReportCaster Server Configuration tool:

- **Graph.** The following graph settings are located on the Data Server tab, which contains settings for each WebFOCUS Reporting Server in your WebFOCUS environment:
  - **Graph Engine.** Controls which graph engine to use for server-side graphics. By default, this specifies the new GRAPH53 setting. You can also specify the GRAPH32 setting used in Version 5 Release 2 and earlier.
  - **Headless.** Determines whether a graphics card exists on the WebFOCUS Reporting Server. When set to NO (the default), a graphics card exists on the server. When set to YES, no graphics card exists on the server (for example, z/OS).
- **PASSTHROUGH.** An option for the Trusted setting located on the Data Server tab, this setting specifies that ReportCaster uses the owner ID of the schedule as the Execution ID, rather than the value that is set in REMOTE_USER at schedule time (which is the value used when Trusted is set to YES). No password is required to connect to the WebFOCUS Reporting Server. PASSTHROUGH can only be enabled when Shared is set to YES. PASSTHROUGH is not supported when the WebFOCUS Reporting Server resides on a Windows platform.



Graph Agent. Located under the User Info folder on the General tab, this setting optimizes the processing of graphs. Due to performance considerations, Information Builders generally recommends configuring this setting to 1 Graph Agent for each concurrent graph report. However, your own internal testing should determine the Graph Agent value that best suits the business needs of your organization.



Note: After making changes in the tool, recycle the ReportCaster Distribution Server and reload the ReportCaster and WebFOCUS (when ReportCaster is configured with Managed Reporting) Web applications in order for the changes to take effect.

Reference: Additional Configuration Tool Settings

For additional configuration tool settings, see the following topics:

- *Customizing the Dynamic Language Switch in ReportCaster* on page 5-14.
- *Report Library Content Compression* on page 5-18.
- *ReportCaster Integration With SiteMinder* on page 10-5.
- *Optional Encryption Providers for ReportCaster* on page 10-6.
- *Configuring the Trusted MR Sign-On Setting for ReportCaster* on page 10-10.

Development and Administration Interface

How to:

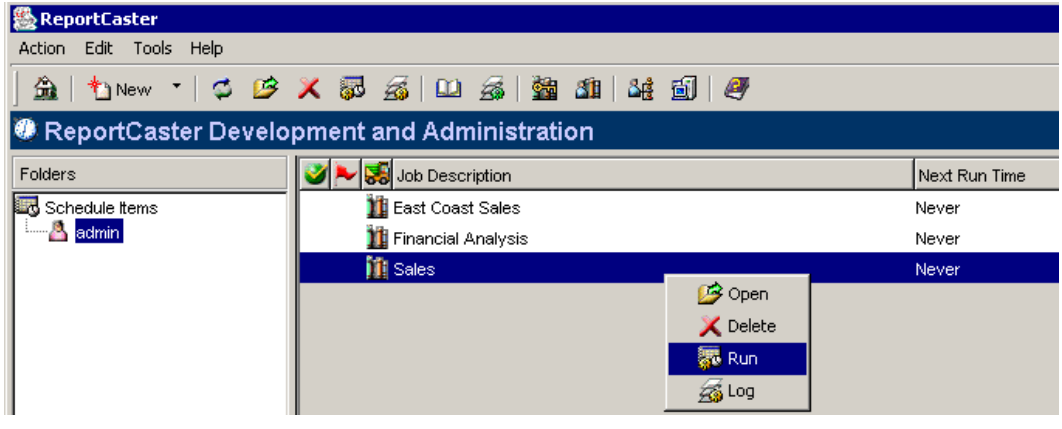
Run a Schedule Immediately

View a Log Report for a Specific Schedule Using the Log Icon or Right-Click Option

The ReportCaster Development and Administration Interface contains Run and Log icons and accompanying right-click options that enable you to run a schedule immediately or view a log report for the schedule based on parameters you specify.

Procedure: How to Run a Schedule Immediately

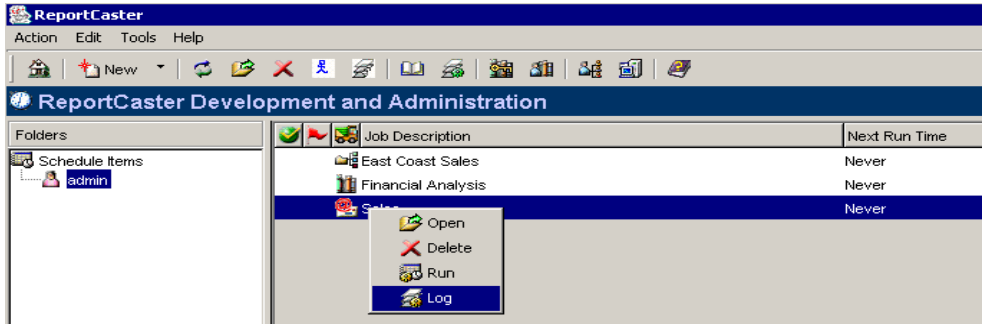
From the ReportCaster Development and Administration Interface, select the schedule and then click the Run icon, or right-click the schedule and then select *Run*.



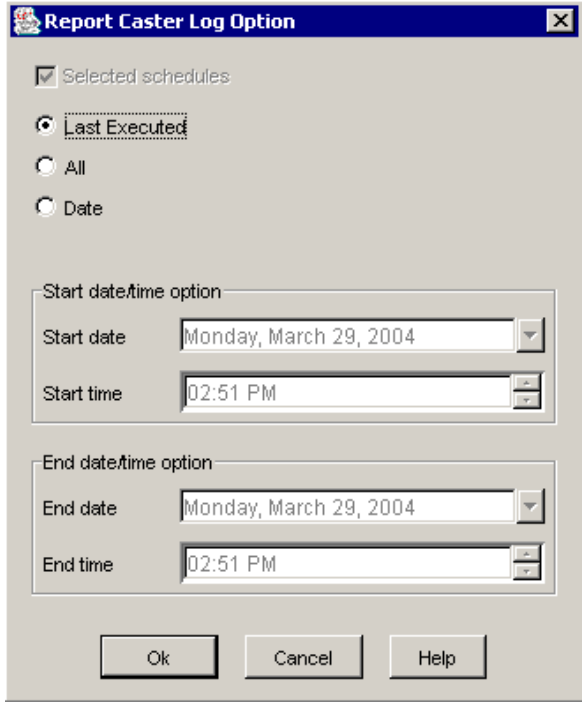
A message should appear informing you that the schedule was sent to run successfully.

Procedure: How to View a Log Report for a Specific Schedule Using the Log Icon or Right-Click Option

1. From the ReportCaster Development and Administration Interface, select the schedule and then click the Log icon, or right-click the schedule and then select *Log*:



The ReportCaster Log Option dialog box opens with the Selected schedules check box active and checked.



Note: You cannot uncheck the Selected schedules check box.

2. Select one of the following option buttons:

   - **Last Executed.** Produces a log report containing the most currently run process for the selected schedule. This is the default value.
   - **All.** Produces a log report containing all run processes for the selected schedule.
   - **Date.** Activates the Start date, Start time, End date, and End time fields.

   If you have selected the Date option, proceed to step 3. Otherwise, proceed to step 7.

3. In the Start date field, specify the date on which you want the log report to begin. The report will display all processes for the selected schedule that were run on or after the specified Start date. You can either type the Start date directly in the field or select a Start date from the drop-down calendar. The current date is the default value for the Start date field.

4. In the Start time field, specify a start time for the Start date by entering it directly into the text box, or by using the arrows. The current time is the default value for the Start time field.

5. In the End date field, specify the date on which you want the log report to end. The report will display all processes for the selected schedule that were run before the specified End date. You can either type the End date directly in the field or select an End date from the drop-down calendar. The current date is the default value for the End date field.

6. In the End time field, specify an end time for the End date by entering it directly into the text box, or by clicking the arrows. The current time is the default value for the End time field.

7. Click *OK* to run the log report.

HTML User Interface

In this section:

Checking the Status of a Scheduled Job

Creating, Updating, and Deleting an Execution ID

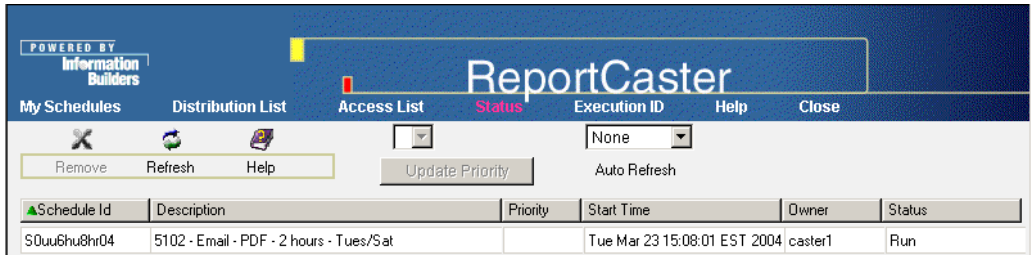
Functionality was added to the ReportCaster HTML User Interface. You can now:

- Check the status of your scheduled jobs.
- Create, update, and delete your Execution IDs, which are valid user IDs that are used to run schedules on a specified server.

Note: Although ReportCaster End Users can view only their own scheduled jobs and Execution IDs, ReportCaster Administrators can view scheduled jobs and Execution IDs for all users.

Checking the Status of a Scheduled Job

From the ReportCaster HTML User Interface, click the *Status* menu option to generate a list of your scheduled jobs that are in the ReportCaster Distribution Server queue:



The list includes schedule ID, schedule description, priority, start time, owner, and status information. Sorting is available for each column by clicking on the column title (for example, Schedule ID). The Status column will contain one of the following values:

- **Run.** The scheduled job is currently running.
- **Queue.** The scheduled job is waiting for a thread to become available to run the request.

Once you have generated a status list of scheduled jobs, you can:

- Select a scheduled job with a status of Queue and click the Remove icon. The schedule will be removed from the queue if it is still in the queue, and the Status list will be refreshed.
- Select a scheduled job with a status of Queue to enable the Update Priority button. In the New Priority field, you can change the priority of the scheduled job using the drop-down list. Click *Update Priority* to change the priority of the scheduled job if it is still in the queue.
- Click the Refresh icon to refresh the current list of schedules with any new jobs that are in the ReportCaster Distribution Server queue. You can automate this process by selecting a value (for example, 10 Seconds) from the Auto Refresh drop-down list.
- Click the Help icon to open the online Help documentation.

Creating, Updating, and Deleting an Execution ID

How to:

Generate a List of Execution IDs

Create a New Execution ID

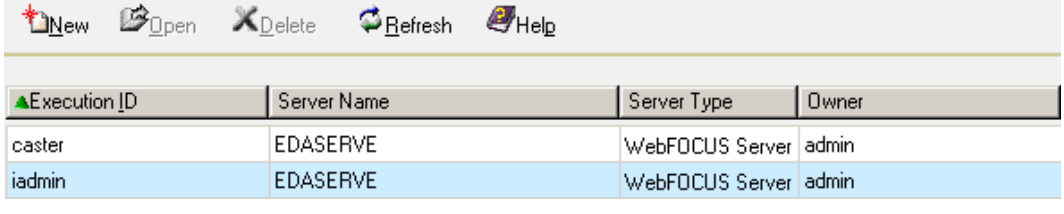
Change an Execution ID and Password

Delete an Execution ID

An Execution ID is a valid user ID that is used to run a schedule on a specified server. When an Execution ID is created, changed, or deleted on a server, it must also be created, changed, or deleted in the ReportCaster Repository tables using ReportCaster. Similarly, when the password for an Execution ID is changed on the server, the password for that Execution ID must also be changed in the ReportCaster Repository tables. Exceptions are when Execution credentials are Trusted.

Procedure: How to Generate a List of Execution IDs

From the ReportCaster HTML User Interface, click the *Execution ID* menu option to generate a list of your Execution IDs defined to ReportCaster.



Note: Execution IDs display when the Run Id Type setting for that server is set to User. For Trusted servers, only the Execution ID can be changed.

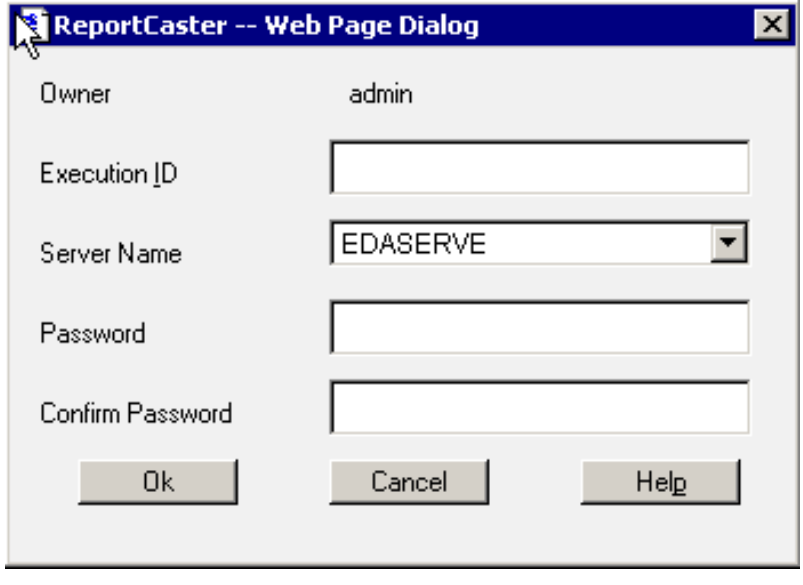
Once you have generated a list of Execution IDs, you can:

- Click the New icon to create a new Execution ID.
- Select an Execution ID and click the Open icon to optionally change the Execution ID for a specific server, and/or change the password of the Execution ID.
- Select an Execution ID and click the Delete icon to delete the Execution ID from the ReportCaster Repository tables.
- Click the Refresh icon to refresh the current list with any newly created Execution IDs.
- Click the Help icon to open the online Help documentation.

Note: When you create, change, or delete an Execution ID it updates the ReportCaster Repository tables so that they are in sync with the specified server. However, the credentials of the user ID on the server itself remain unchanged.

Procedure: How to Create a New Execution ID

1. Click the *Execution ID* menu option.
2. Click the New icon. The ReportCaster -- Web Page Dialog dialog box opens:

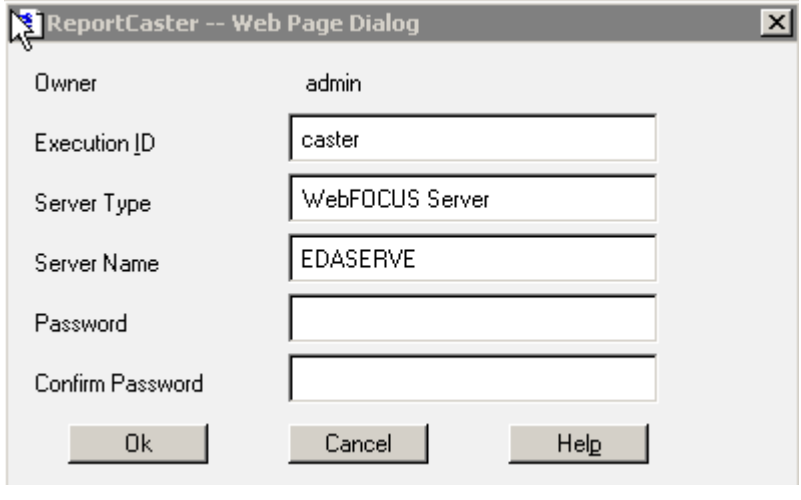


3. Specify the following parameters:
   a. **Server Name:** From the Server Name drop-down list, select the name of a WebFOCUS Reporting Server that will be used to run schedules.
   b. **Execution ID:** Enter a valid user ID for the server.
   c. **Password:** Enter the password of the user ID. Note that you are not creating this password on the specified server, but are entering the existing password into the ReportCaster Repository.
   d. **Confirm Password:** Reenter the password.
4. Click *OK* to create the Execution ID in the ReportCaster Repository table, or click *Cancel* to cancel the request.

Procedure: How to Change an Execution ID and Password

To change an Execution ID and/or password for a specific server, perform the following steps:

1. Click the *Execution ID* menu option to generate a list of your Execution IDs.
2. Select the Execution ID whose properties you want to change (for example, caster). This activates the Open icon, enabling you to change the Execution ID, the Execution ID's password, or both.
3. Click the *Open* icon. The ReportCaster -- Web Page Dialog dialog box opens:



4. Optionally, enter the following information:

   a. **Execution ID:** Enter a value for the Execution ID. This should be an already existing and valid Execution ID. This Execution ID will globally replace the old Execution ID for all schedules on the specified server.

   b. **Password:** Enter the password for the Execution ID. This password must match the current password for this user ID on the server that appears in the Server Name field.

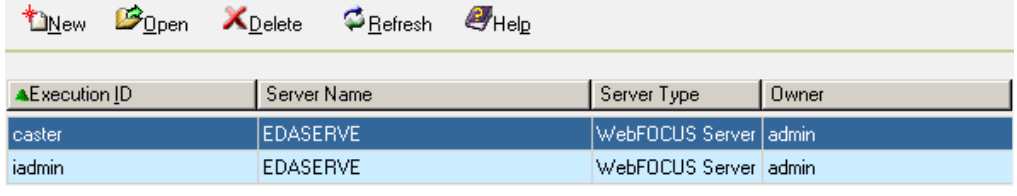
   c. **Confirm Password:** Reenter the password.

      Changing the password using ReportCaster does not change the password on the specified server.

5. Click *OK* to change the Execution ID and/or password values in the ReportCaster Repository tables. A message appears confirming that the values have been changed.

Procedure: How to Delete an Execution ID

1. Click the *Execution ID* menu option to generate a list of your Execution IDs.
2. Select the Execution ID you want to delete (for example, caster).



3. Click the Delete icon. A message appears asking for confirmation that you want to delete the selected Execution ID.
4. Click *OK*.

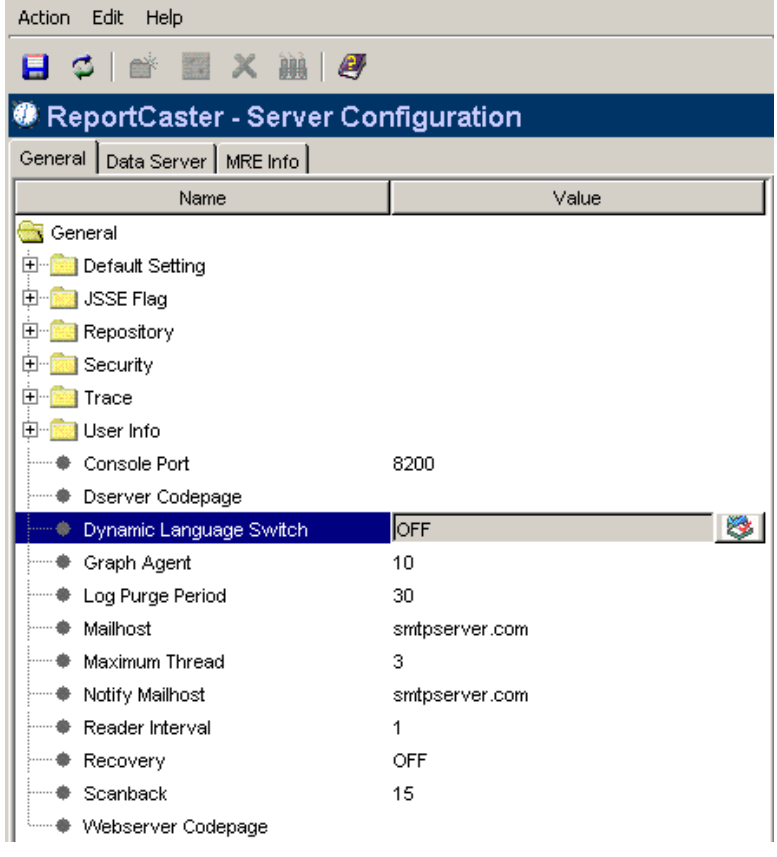
Once the Execution ID is deleted, a scheduled job that requires this Execution ID on the specified server will not run unless the schedule is modified to use a valid Execution ID. If you modify the Execution credentials for a single schedule that specifies the deleted Execution ID, ReportCaster will make this modification for all schedules that specify the deleted Execution ID.

Customizing the Dynamic Language Switch in ReportCaster

You can customize which languages are available on the Report Library and ReportCaster HTML End User logon pages using the Dynamic Language Switch setting in the ReportCaster Server Configuration tool.

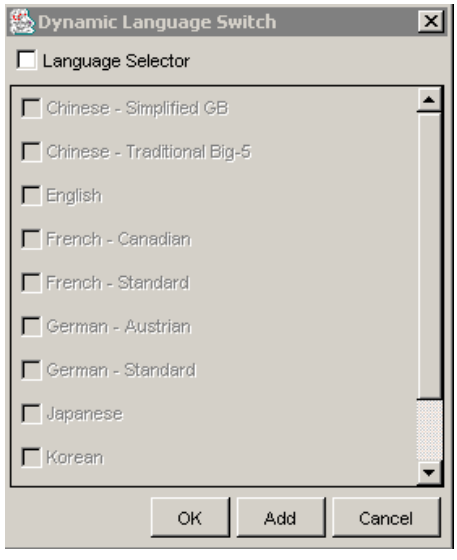
Procedure: How to Customize the Dynamic Language Switch

1. On the General tab of the ReportCaster Server Configuration tool, select *Dynamic Language Switch*.



2. Select the icon to enable the Dynamic Language Switch.

   The Dynamic Language Switch window opens:



3. Select the *Language Selector* check box.

   This activates the check boxes for the languages. Only the languages that are shipped with ReportCaster appear. These languages are:

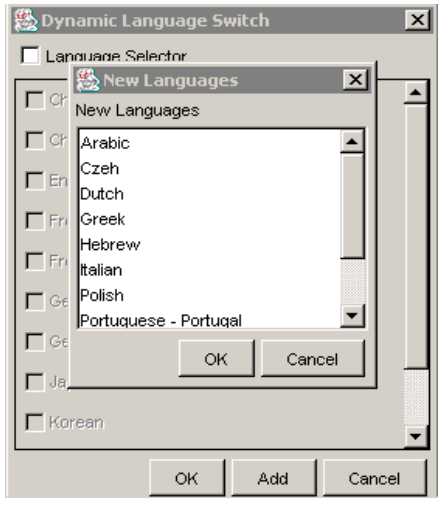
   - Chinese - Simplified GB
   - Chinese - Traditional Big-5
   - English
   - French - Standard
   - French - Canadian
   - German - Standard
   - German - Austrian
   - Japanese
   - Korean
   - Portuguese - Brazilian
   - Spanish

4. Check the languages (for example, English and Japanese) you want to appear in the Select Languages drop-down list on the Report Library and ReportCaster HTML End User logon pages.

If you want to add a language that does not appear on the Dynamic Language Switch window, proceed to step 5. Otherwise, proceed to step 6.

5. Click *Add*.

The New Languages window opens containing additional languages that were not shipped with ReportCaster.



Select a language (for example, Hebrew) or languages and then click *OK*.

The language you selected (for example, Hebrew) appears as an option on the Dynamic Language Switch window.

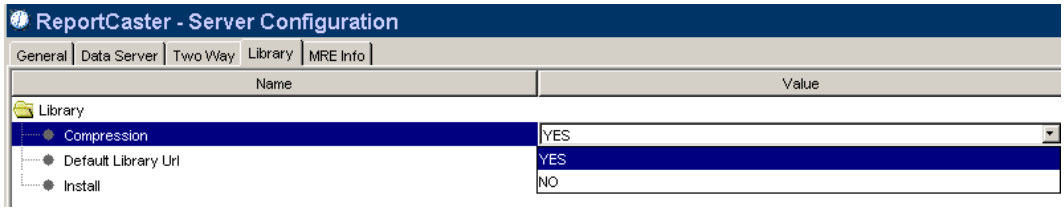
6. Click *OK* to save the changes and exit the Dynamic Language Switch window. You can also click *Cancel* to cancel the changes and exit the window.

Note:

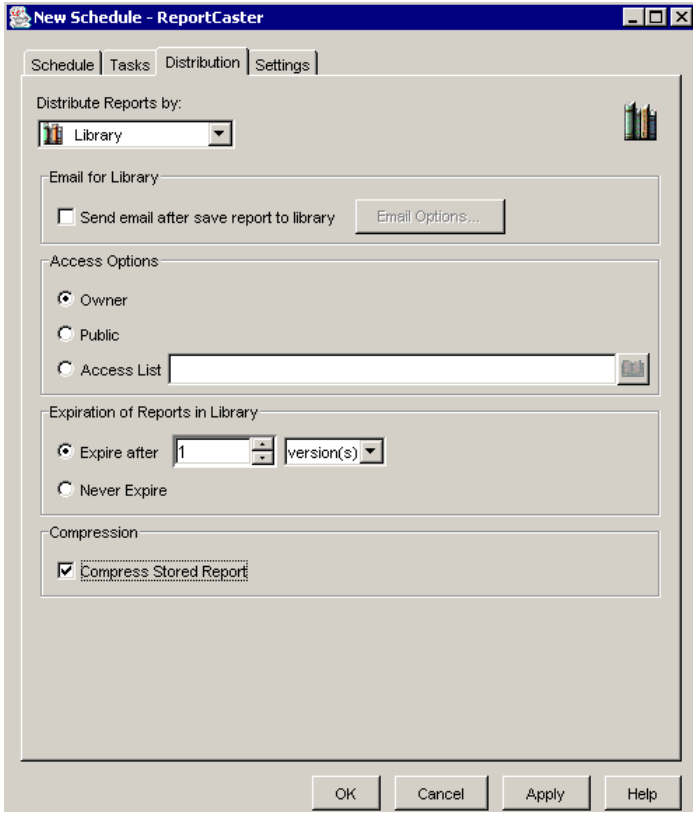
- To remove languages from the Select Languages drop-down list on the Report Library and ReportCaster HTML End User logon pages, repeat these steps but instead deselect the check box for the language.
- If you selected a language that is not shipped with ReportCaster, you must translate the language. For more information about how to accomplish this, see the *Working with Localized Versions* chapter in the *National Language Support Manual*.

Report Library Content Compression

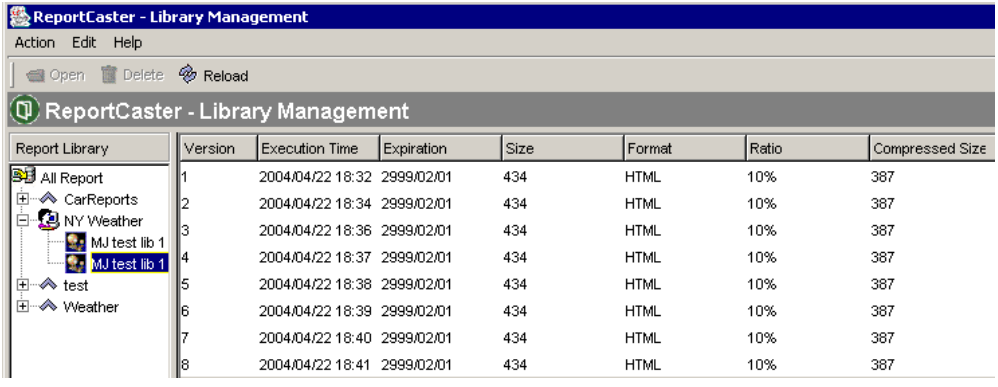
To conserve space, you can compress files stored in the Report Library. ReportCaster Administrators can set compression on by default using the Compression setting in the Library tab in the ReportCaster Server Configuration tool.



When creating a schedule from the ReportCaster Development and Administration Interface, you can override the Compression setting if it is being distributed to the Library. You can accomplish this by selecting the *Compress Stored Report* check box in the Distribution tab:



Although compression is seamless to users viewing content in the Report Library, ReportCaster Administrators can see which files are compressed, and their compression ratios, in Library Management:


ReportCaster - Library Management
Action Edit Help
Open Delete Reload
ReportCaster - Library Management
Report Library
All Report
CarReports
NY Weather
MJ test lib 1
MJ test lib 1
test
Weather
Version Execution Time Expiration Size Format Ratio Compressed Size
1 2004/04/22 18:32 2999/02/01 434 HTML 10% 387
2 2004/04/22 18:34 2999/02/01 434 HTML 10% 387
3 2004/04/22 18:36 2999/02/01 434 HTML 10% 387
4 2004/04/22 18:37 2999/02/01 434 HTML 10% 387
5 2004/04/22 18:38 2999/02/01 434 HTML 10% 387
6 2004/04/22 18:39 2999/02/01 434 HTML 10% 387
7 2004/04/22 18:40 2999/02/01 434 HTML 10% 387
8 2004/04/22 18:41 2999/02/01 434 HTML 10% 387

Including Parameters and Burst Values in an E-mail Subject Line

Example:

Specifying Parameters and Burst Values in an E-mail Subject Line

When creating a schedule, you can place multiple parameters and burst values from the scheduled procedure in an e-mail subject line. This allows the subject to be dynamically created in order to personalize e-mails to recipients.

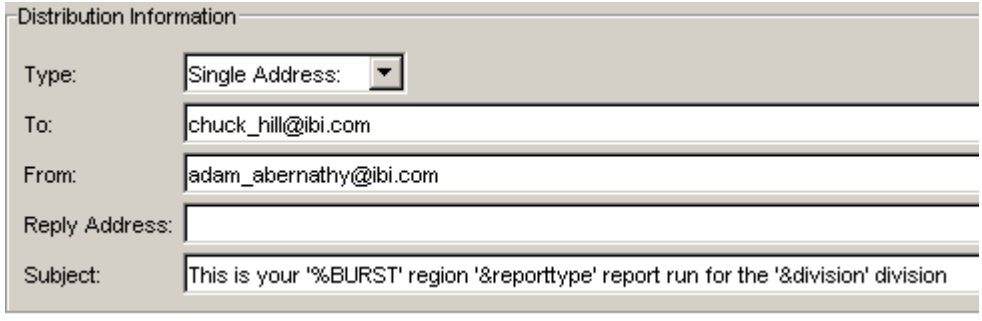
Parameters must be specified in the format '&*parmname*' (where *parmname* is the name of the parameter). Burst values must be specified using the syntax '%BURST'.

Note:

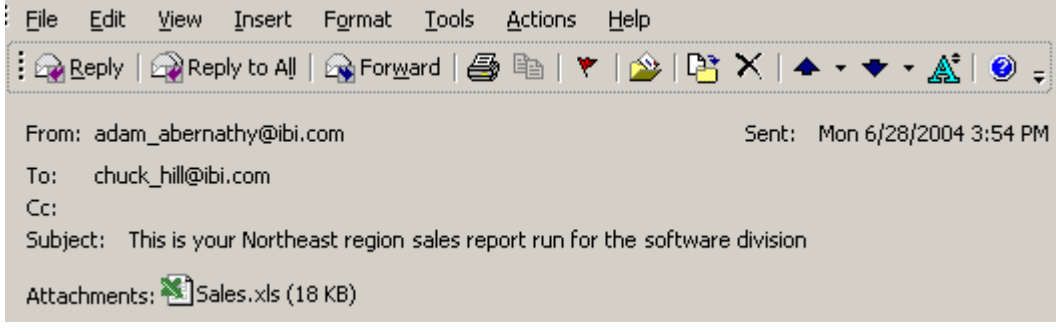
- The parameter name cannot also be the name of an existing WebFOCUS procedure. You may specify an unlimited number of parameters.
- Burst values are only retrieved from the first Task in a multi-Task schedule. If you have multiple burst values in a Distribution List, only the first value sent to the ReportCaster Distribution Server is included in the subject.

Example: Specifying Parameters and Burst Values in an E-mail Subject Line

This schedule specifies burst values and multiple parameters in the e-mail subject line:



The above schedule might result in an e-mail similar to the following:



Automatically Deleting Distribution Files

You can configure ReportCaster so that Distribution Files are automatically deleted after a schedule runs.

Procedure: How to Automatically Delete a Distribution File

1. Create a blank file in the cfg directory under the ReportCaster installation directory (for example, c:\ibi\ReportCaster53\cfg) called fileaddr.txt. This file must be called fileaddr.txt.
2. Create a directory located on the same machine as the ReportCaster Distribution Server (for example, c:\ibi\ReportCaster53\addrpath).

3. Edit fileaddr.txt and type the fully qualified directory path (for example, c:\ibi\ReportCaster53\addrpath) of the Distribution Files to be deleted. It does not matter whether there is a slash at the end of the directory path. If an invalid directory path is specified in fileaddr.txt, no Distribution Files will be deleted.
4. Place the Distribution File(s) you want automatically deleted when a schedule runs in the c:\ibi\ReportCaster53\addrpath directory.
5. Modify your schedules so that the Distribution File(s) are retrieved from the c:\ibi\ReportCaster53\addrpath directory.

Report Formats

You can schedule output using the EXL2K PIVOT, Joint Photographic Experts Group (JPG), Scalable Vector Graphics (SVG), and Portable Network Graphics (PNG) formats. The following table describes these formats and provides recommendations and considerations when using them with ReportCaster:

Format	Description	Suggested Uses	Considerations
EXL2K PIVOT	Used to analyze complex data much like the OLAP tool in WebFOCUS. It allows you to drag and drop data fields within a PivotTable, providing different views of the data, such as sorting across rows or columns.	E-mail, Library	Microsoft Excel 2000 or higher must be installed. The format is ASCII. All EXL2K output with an .xht extension is dynamically changed to .xls for e-mail or FTP distribution. You must edit your Web server's MIME table so that the .xls extension is ascii/application data instead of binary. Bursting is not supported. Must be using Microsoft Office 2000 at a minimum release level of 9.0.3821 SR-1 in order to open in the Report Library.
JPG	Scheduled output opens as a graphic in JPG format.	E-mail, Library	Only files can be distributed using this format. However, you can embed a JPG in a PDF report and then distribute the PDF report using ReportCaster.

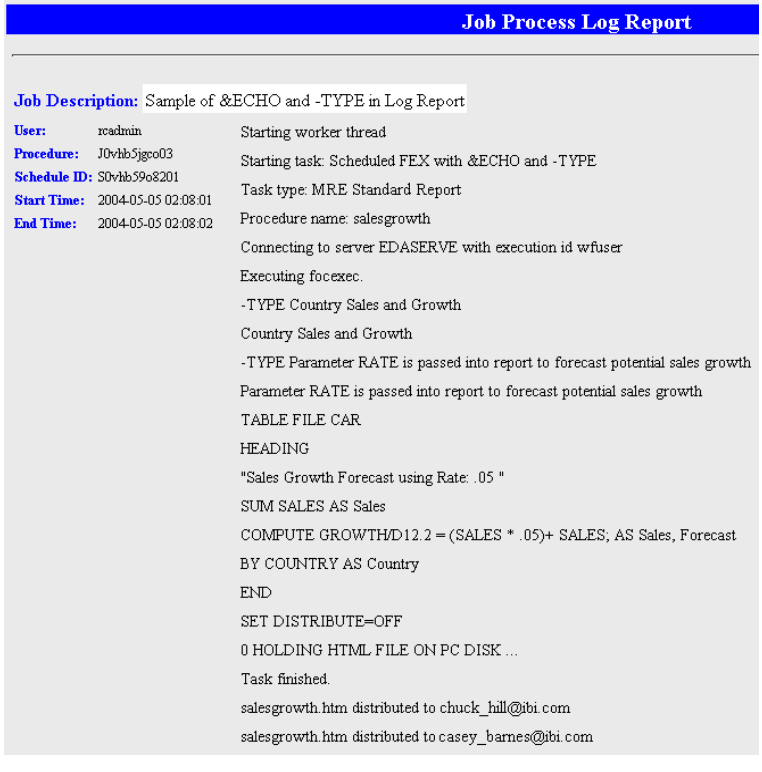
Format	Description	Suggested Uses	Considerations
PNG	Scheduled output opens as a graphical image. These graphs are bit mapped and can support 16 million colors. In addition, PNG graphs have loss less compression (data is decompressed 100% back to the original). Therefore, saving, altering, and resaving a PNG does not degrade its overall quality. For these reasons, PNG graphs are superior to GIF graphs.	E-mail, Library	Only works with procedures that contain GRAPH FILE syntax. Bursting is supported and is performed on the second BY field in the GRAPH FILE request. Drill downs are not supported, as this format creates a static image.
SVG	Scheduled output opens as a graphical image. This file format, based on Extensible Markup Language (XML), presents powerful, interactive graphical images.	E-mail, Library	Same as PNG. Additionally, recipients must have an SVG viewer, such as Adobe SVG Viewer for Windows. To download Adobe SVG Viewer for Windows, go to http://www.adobe.com/support/downloads/product.jsp?product=46&platform=windows.

&ECHO and -TYPE Support in Log Reports

Values from &ECHO variables and –TYPE commands in WebFOCUS procedures appear in log reports. The &ECHO variable displays command lines as they execute in order to test and debug procedures. The -TYPE command enables you to comment and evaluate your code for informational and debugging purposes. For example, this procedure:

```
-SET &ECHO=ALL;
-TYPE Country Sales and Growth
-TYPE Parameter RATE is passed into report to forecast potential sales growth
TABLE FILE CAR
HEADING
"Sales Growth Forecast using Rate: &RATE "
SUM SALES AS 'Sales'
COMPUTE GROWTH/D12.2 = (SALES * &RATE)+ SALES; AS 'Sales, Forecast'
BY COUNTRY AS 'Country'
END
```

may produce the following log report when scheduled using ReportCaster:



Job Process Log Report

Job Description: Sample of &ECHO and -TYPE in Log Report

User: rcadmin
Procedure: J0vhb5jgco03
Schedule ID: S0vhb59o8201
Start Time: 2004-05-05 02:08:01
End Time: 2004-05-05 02:08:02

Starting worker thread
Starting task: Scheduled FEX with &ECHO and -TYPE
Task type: MRE Standard Report
Procedure name: salesgrowth
Connecting to server EDASERVE with execution id wfuser
Executing focexec.
-TYPE Country Sales and Growth
Country Sales and Growth
-TYPE Parameter RATE is passed into report to forecast potential sales growth
Parameter RATE is passed into report to forecast potential sales growth
TABLE FILE CAR
HEADING
"Sales Growth Forecast using Rate: .05 "
SUM SALES AS Sales
COMPUTE GROWTH/D12.2 = (SALES * .05)+ SALES; AS Sales, Forecast
BY COUNTRY AS Country
END
SET DISTRIBUTE=OFF
0 HOLDING HTML FILE ON PC DISK ...
Task finished.
salesgrowth.htm distributed to chuck_hill@ibi.com
salesgrowth.htm distributed to casey_barnes@ibi.com

PDF Drill Through Support

The PDF Drill Through feature enables Report Library users to move from a summary report to a detail report, both of which are packaged together in a single PDF compound report. Drill Through functionality is similar to Drill Down functionality except Drill Through reports are static. A PDF document is produced that contains the summary report plus a detail report, with the detail report containing all the detail data for all the line items in the summary report. Clicking a Drill Through hyperlink navigates internally within the PDF file; no additional reports are run. The PDF file can be distributed to the library using ReportCaster, and when opened with Acrobat Reader, retains its full Drill Through functionality.

For more information about the PDF Drill Through feature, see *Creating a Drill Through PDF Compound Report* in Chapter 1, *WebFOCUS Reporting Language Enhancements*.

ReportCaster Bean and Web Services API

In this section:

Address Book Options

Scheduling Options

Report Library Options

ReportCaster Console Options

Log File Options

The new ReportCaster Bean and Web Services Application Programming Interface (API) provides access to full ReportCaster functionality independent of WebFOCUS and ReportCaster user interfaces. Using the ReportCaster API, developers of self-service applications can enable users to distribute reports via Web applications.

Using JDBC, the ReportCaster Bean and Web Services API accesses the ReportCaster Repository to read and write scheduling and distribution information. The ReportCaster Distribution Server then sends this distribution information, when applicable, to the WebFOCUS Reporting Server to run. Developers must provide a valid ReportCaster logon to their ReportCaster API applications for ownership of schedules and Distribution Lists.

The new ReportCaster Bean and Web Services API improves on the previous version of ReportCaster Bean API by offering the full range of functionality of ReportCaster, instead of the more limited scheduling and logging options available in the 5.2 release.

The ReportCaster Bean and Web Services API consists of JavaBeans™ components that are extended by Information Builders as Beans. This enables developers to use JavaServer Pages™ (JSP™) technology or a Java application to create an independent, customized application that offers the features of ReportCaster.

Address Book Options

The ReportCaster Bean and Web Services API provides methods that enable you to:

- Create a new Address Book.
- Add a line to an existing Address Book.
- Retrieve an Address Book from a repository.
- Retrieve a list of all public Address Books for a specific distribution method.
- Retrieve a list of all private Address Books belonging to a specific owner for a specific distribution method.
- Update an existing Address Book by adding a new destination or burst value.
- Delete an Address Book.
- Delete a line from an Address Book.

Scheduling Options

The ReportCaster Bean and Web Services API provides methods that enable you to:

- Create a report schedule specifying the run time, distribution method (e-mail, FTP, printer, Managed Reporting, or Report Library), notification parameters, report format, and whether to burst the report.
- Schedule alerts.
- Schedule the distribution of a file or the contents of a URL.
- Schedule a Managed Reporting procedure.
- Retrieve a list of scheduled Managed Reporting procedures.
- List the procedures (FOCEXECs) on the default WebFOCUS Reporting Server available for scheduling.
- Specify whether to use a Distribution List, distribution file name, single destination, or dynamic address list.
- Specify whether the report output should be sent within the body of the e-mail (inline) or as an attachment (e-mail distribution only.)
- Update a schedule.
- Delete a schedule.
- Retrieve a list of existing schedules.
- Retrieve the properties and details of a schedule.
- Run a job once at a specific time without storing the schedule information in the ReportCaster Repository.

Report Library Options

The ReportCaster Bean and Web Services API provides methods that enable you to:

- Distribute reports to the Report Library.
- Manage content of the Report Library.
- Track versioning.
- View content in the Report Library.

Note that you cannot create Access Lists through the API.

ReportCaster Console Options

The ReportCaster Bean and Web Services API provides methods that enable you to:

- Query the ReportCaster Distribution Server queue to show a list of pending jobs.
- Query the ReportCaster Distribution Server queue to show a list of running jobs.
- Change a job's priority from the default (3).
- Delete a pending job from the queue.

Log File Options

The ReportCaster Bean and Web Services API provides methods that enable you to:

- Retrieve the list of schedules that have log information stored in the ReportCaster Repository.
- Retrieve log information for a specific schedule.
- Retrieve log information based on log field values and specified conditions.
- Purge log records for a specified schedule.
- Purge log records based on log field values and specified conditions.

CHAPTER 6

WebFOCUS Client Enhancements

This chapter describes all of the features for the WebFOCUS Client in Version 5 Release 3.

Topics:

WebFOCUS Administration Console

- Name Change for WebFOCUS Client Console
- Setting a Default WebFOCUS Reporting Server
- New Grouping of Variables in cgivars.wfs
- Restoring Default Client Settings
- New Settings in cgivars.wfs
- New Format Types in mime.wfs
- Customizing the Dynamic Language Switch
- Configuring the Client for the Baltic Language
- Configuring Managed Reporting Tool Types
- Configuring Default Values for the WebFOCUS Client
- Quick Link to WebFOCUS Applications
- Middle Tier DBA Password
- Diagnostics
- Configuring Managed Reporting Realm Driver Authentication

Localized Versions

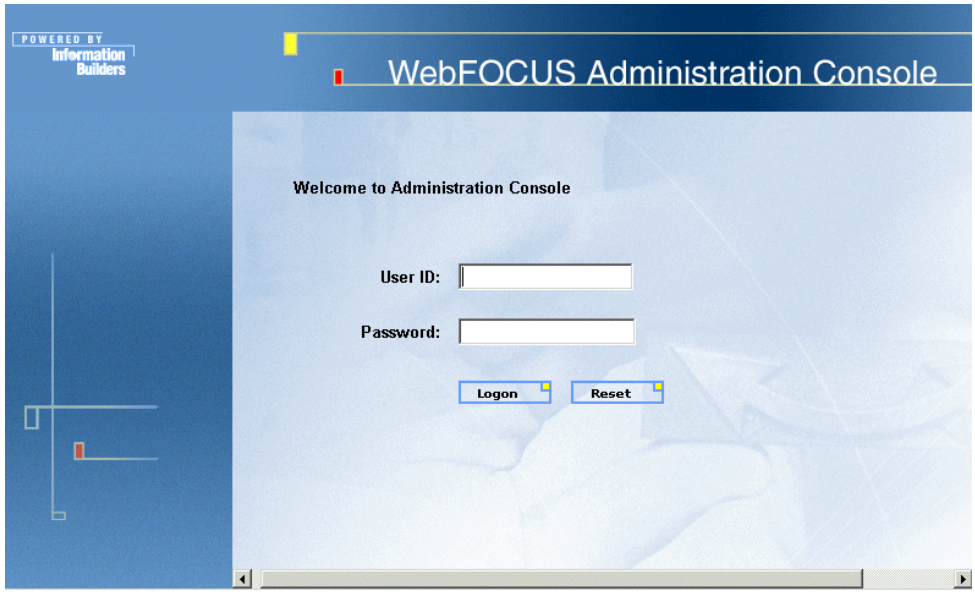
- Portuguese Localized Version

Browser Support

- Netscape Support

Name Change for WebFOCUS Client Console

The WebFOCUS console name has changed to WebFOCUS Administration Console.



Setting a Default WebFOCUS Reporting Server

You can specify any node as the default WebFOCUS Reporting Server in a WebFOCUS environment.

Procedure: How to Set a Default WebFOCUS Reporting Server

1. Click *Reporting Servers* and then *Remote Services*.
2. Select the node you want to change.
3. Click *Modify*.

   This displays the settings for the selected node, enabling you to make changes.
4. Select the *Set as Default Server Node* check box to specify that the node is the default WebFOCUS Reporting Server.

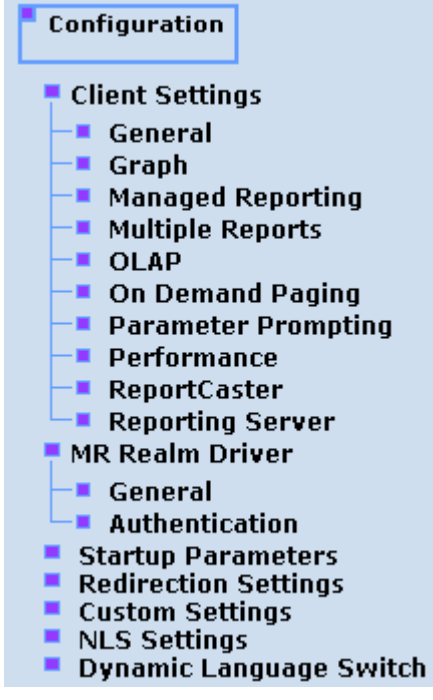
   The node will be written as the IBI_REPORT_SERVER parameter value in the cgivars.wfs file.

New Grouping of Variables in cgivars.wfs

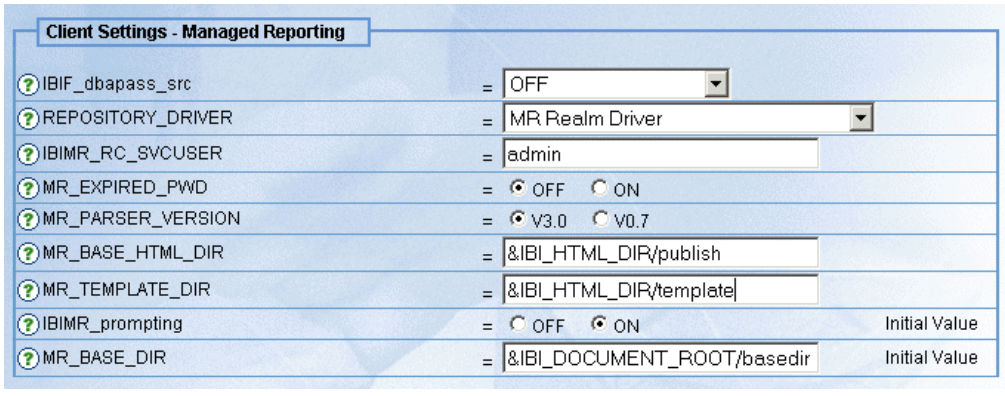
The client configuration settings are grouped into categories in the console. Some settings apply to multiple categories and are in each of these categories in the console. If you change a setting in one category, the change applies to all categories in which that setting appears.

The term *Initial Value* next to a setting means that the value shown initially is the installation default value and that it can be overridden by setting the variable explicitly in the URL request.

In the Administration Console click *Configuration*, then *Client Settings*. The variables are separated into categories as follows.



Clicking any category allows you to view and edit the variables used to configure that category. For example, to see or edit the Managed Reporting variables, click *Managed Reporting*. The following screen appears.

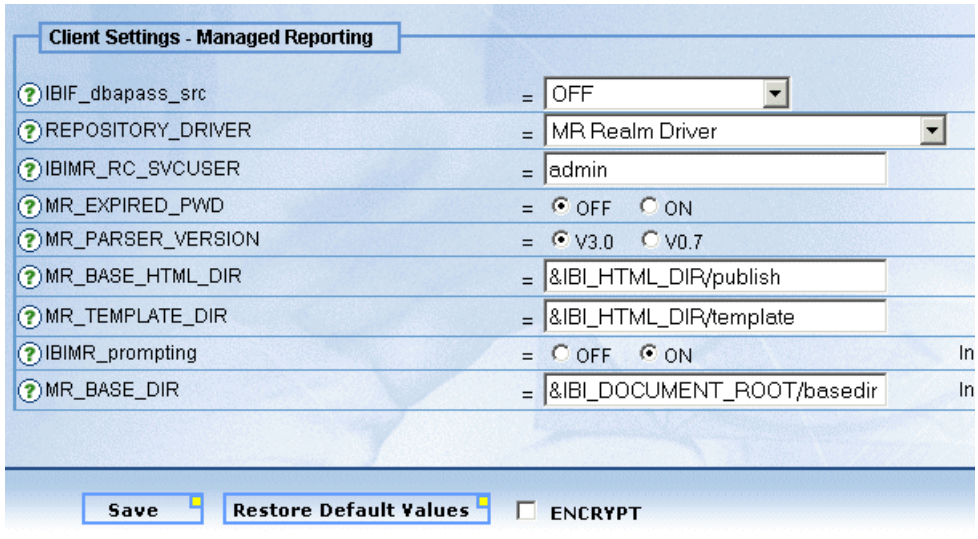

Client Settings - Managed Reporting
IBIF_dbapass_src = OFF
REPOSITORY_DRIVER = MR Realm Driver
IBIMR_RC_SVCUSER = admin
MR_EXPIRED_PWD = OFF ON
MR_PARSER_VERSION = V3.0 V0.7
MR_BASE_HTML_DIR = &IBI_HTML_DIR/publish
MR_TEMPLATE_DIR = &IBI_HTML_DIR/template
IBIMR_prompting = OFF ON Initial Value
MR_BASE_DIR = &IBI_DOCUMENT_ROOT/basedir Initial Value

If you want to see documentation about the Client settings, click the Help icon (?) next to any variable.

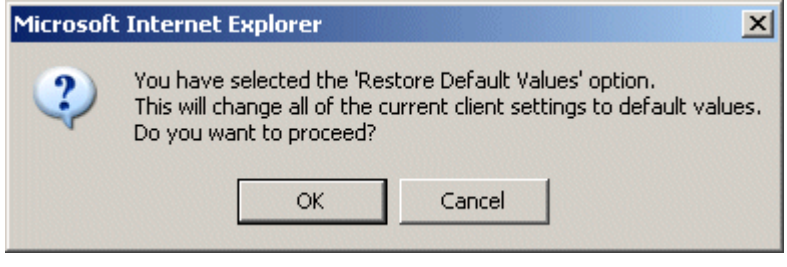
Make the necessary changes to the settings and then click *Save*.

Restoring Default Client Settings

After you have changed and saved WebFOCUS Client settings using the WebFOCUS Administration Console, you can return all settings to their installation defaults by clicking the *Restore Default Values* button.



The following dialog box opens to make sure you want to restore all settings:


Microsoft Internet Explorer
You have selected the 'Restore Default Values' option.
This will change all of the current client settings to default values.
Do you want to proceed?
OK
Cancel

Click *OK* to restore all defaults, *Cancel* to leave the settings as they are.

New Settings in cgivars.wfs

Reference:

New General Settings in the WebFOCUS Administration Console

New Graph Settings in the WebFOCUS Administration Console

New Managed Reporting Settings in the WebFOCUS Administration Console

New Multiple Reports Settings in the WebFOCUS Administration Console

New OLAP Settings in the WebFOCUS Administration Console

New On Demand Paging Settings in the WebFOCUS Administration Console

New Parameter Prompting Settings in the WebFOCUS Administration Console

New Performance Settings in the WebFOCUS Administration Console

New Startup Parameter in the WebFOCUS Administration Console

The following are new settings in the cgivars.wfs configuration file.

In the Administration Console click *Configuration*, then *Client Settings*.

Reference: New General Settings in the WebFOCUS Administration Console

Choose the *General* category to view or edit the following settings.

Setting	Description
SAVE_FEX	Trace option that enables you to write the output procedure sent to the WebFOCUS Reporting Server to a location accessible by the WebFOCUS Client. It contains only the packaged request and is used only for debugging purposes. The file is always created in the /web/cgi directory of the WebFOCUS Client and that the name you provide in the console is the name of the file placed in that directory.
_eda_config	Points to where the odin.cfg file resides.
CGI_PROG	Overrides the WFServlet, CGI/ISAPI client path for every redirected request.

Setting	Description
REDIRECT_COOKIE	Prevents a redirected request that was run on one machine from being viewed from a browser on another machine. It uses a unique encrypted identifier to ensure that the person that sent the original request is the same person retrieving the output again.
WFTRANSINOUT	Is a fully qualified Java class that does the transin/transout processing for a plug-in for the Servlet version of the WebFOCUS Client. This class must implement the WFTransInOutInterface java class that enables data that is passed between the WebFOCUS Reporting Server and the Servlet to be parsed for bi-directionality (left/right vs. right/left strings). The WFTRANSINOUT parameter must point to a java class that implements the WFTransInOutInterface class. The following methods must be implemented in the java class: • wfEnableInOut() • wfTransin (java.lang.String strToModify) • wfTransout(byte[] byteToModify)
WFEXT	Specifies the Java class that invokes the WebFOCUS Servlet Plug-in. For more information on the WebFOCUS Servlet Plug-in, see *Copying WebFOCUS Variables Using the WebFOCUS Servlet Plug-in* in Chapter 10, *Manipulating WebFOCUS Variables*.
IBI_BACKUP_DIR	Location of the backup directory. By default, points to webfocus\backup unless a different directory was specified during the installation of the WebFOCUS Client. The conf subdirectory under backup contains a copy of cgivars.wfs with all of the default values. This is where the console retrieves the default values for cgivars.wfs when the Restore Default Values option is selected. The administrator can change the backup directory to another location. However, the conf directory must be created under the new location.

Reference: New Graph Settings in the WebFOCUS Administration Console

Choose the *Graph* category to view or edit the following setting.

Setting	Description
IBIF_graphengine	Controls which graph engine to use for server-side graphics. For WebFOCUS 5.3, you must use Graph53.
IBIF_graphservurl	Configures graph image files on the Server: &*URL_PROTOCOL*://*machinename*/*alias*/IBIGraphServlet where: *URL_PROTOCOL* Is either http or ftp. *machinename* Is the name of the Web server where the WebFOCUS Client is installed. *alias* Is the context root of the WebFOCUS application. GRAPHSERVURL should not be used in an SSL environment (https). Instead, use the IBIJAVAPATH or JSCOM3 configuration options. IBIJAVAPATH is comprised of the parameters IBIJAVADIR and IBIJAVACMD and is only used when GraphServUrl and JSCOM3 are not used. To use JSCOM3, a JSCOM node must de defined and properly configured on ODIN.CFG on the WebFOCUS Reporting Server (configured by default during installation). The value of the variable IBI_USE_JSCOM3 must be set to Yes, which can be done using the WebFOCUS Administration Console. Also, the graph jar files must be located on the WebFOCUS Reporting Server and the classpath must be set, which can be done using the Reporting Server Web Console or in a batch job prior to starting the server.
IBIF_graphHeadLess	Enables you to render graphics on a UNIX or MVS machine without a 3rd-party software, such as a X-Windows Server. This setting requires JDK 1.4 or higher.

Setting	Description
IBIF_graphAgents	Specifies the number of pre-started agents available for graph processing.
SSG_EXTERNAL	Enables server-side graphics when using the WFServlet. This setting is recommended for large graph requests since it spawns new JVM processes for each request.

Reference: New Managed Reporting Settings in the WebFOCUS Administration Console

Choose the *Managed Reporting* category to view or edit the following settings.

Setting	Description
IBIF_dbapass_src	Controls whether to pass a DBA password to the WebFOCUS Reporting Server on each WebFOCUS request.
REPOSITORY_DRIVER	Holds the name of the repository driver (which determines the repository used for authentication and authorization). This setting was previously located in the \WEB-INF\web.xml file. Select one of the following settings: **MR Driver** is the default driver that uses the Managed Reporting repository when ReportCaster is not installed. Writes ibi.webfoc.wfmre.repos.basedir.WFMRBasedirFactory into cgivars.wfs and updates the MR basedir. **MR/RC Driver** is the default driver that uses the Managed Reporting repository when ReportCaster is installed. This driver also synchronizes the Managed Reporting repository with the ReportCaster repository. Writes ibi.webfoc.wfmre.repos.dst_bd.WFMRDST_BDFactory into cgivars.wfs. **MR Realm Driver** is the optional driver distributed with WebFOCUS that implements authentication and/or authorization using any combination of the default drivers and several third party repositories such as LDAP and Active Directory. **Other Driver** is a custom driver that the customer site wrote and configured. If you choose this option, a text box displays in which you must enter the fully qualified name of the class for the driver.

Setting	Description
IBIMR_RC_SVCUSER	Is the user ID that the MR Realm Driver can use to connect to ReportCaster when creating a new Managed Reporting user. This setting allows the MR Realm Driver to synchronize the ReportCaster repository with the repository used by the Realm Driver for Managed Reporting authentication. By default, the user ID is admin, but this value can be changed after installation.
MR_PARSER_VERSION	Specifies which HTML parser Managed Reporting uses against the basedir directory. This setting was previously located in the \WEB-INF\web.xml file. Information Builders recommends using the default value, as there is a 50% performance improvement.
IBIMR_prompting	Enables parameter prompting for all Managed Reporting requests.
MR_BASE_HTML_DIR	Location where all Managed Reporting published pages will reside.
MR_TEMPLATE_DIR	Location where all Managed Reporting templates will reside.

Reference: New Multiple Reports Settings in the WebFOCUS Administration Console

Choose the *Multiple Reports* category to view or edit the following setting.

Setting	Description
IBIWF_mframename	Used to name each frame in a multi-frame report. The name of each frame will be this value followed by an index number. For example, for two frames with IBIF_mframename set to MYFRAME, the two frames will be named MYFRAME1 and MYFRAME2. The default value is MREPORT.
IBIWF_mrcolumns	Specifies the maximum number of columns per page in multi-frame reports. The default value is 1.
IBIWF_morder	Specifies whether the report frames in a multi-frame report should appear in the order that the columns are specified in the fex or the reverse order. Valid values are FORWARD and REVERSE. The default value is FORWARD.

Setting	Description
IBIWF_mreports	Specifies whether to create an index report, a multi-frame report, or a standard report. Valid values are OFF, INDEX, and FRAME. The default value is OFF.
IBIWF_mprefix	Specifies up to 50 characters of descriptive text that precedes a sequence number and identifies a report on a TOC. Used to create hyperlink names in index reports. For example, if the value is *MyReport*, the hyperlinks will composed of the name MyReport followed by an index number starting with 1. Default value is *Report*. Do not use this variable if IBIWF_mreports=FRAME.
IBIWF_mrrows	Is the number of vertically stacked reports when IBIWF_mreports is set to FRAME.
IBIWF_index	Controls whether a sequence number is appended to the end of the names on the TOC when IBIWF_mreports=INDEX. ON appends a sequence number of 1 (for the first report generated) to *n* (for the last report generated). This value is the default. OFF omits a sequence number. Only the text specified by IBIWF_mprefix applies.

Reference: New OLAP Settings in the WebFOCUS Administration Console

Choose the *OLAP* category to view or edit the following setting.

Setting	Description
IBIF_olappos	Location of the OLAP Panel (top, bottom).

Reference: New On Demand Paging Settings in the WebFOCUS Administration Console

Choose the *On-Demand Paging* category to view or edit the following settings.

Setting	Description
IBIF_odpenable	Controls display of On-Demand Paging (ODP) reports. The value of this variable overrides the value of the WEBVIEWER parameter which can be used in a procedure to produce ODP output. YES Displays the report. Yes is the default value. NO Does not display the ODP report. Instead, a page with a message displays. You can specify the message text in variable IBIODP_disable_msg. If you do not, a blank line displays.
IBIODP_disable_msg	This variable contains a message, which will be displayed instead of the ODP report output when IBIF_odpenable is set to NO. The default value is a blank line.
ODP_target	Controls the back-button's action in the Web Viewer. ON The browser's *Back* button redisplays the first ODP page. OFF The browser's *Back* button returns the browser to the calling page of the ODP report.
_search_begin	Opening HTML tag for highlighting text found as a result of a search in an ODP report. The default is <u>, to underline the text.
_search_end	Closing HTML tag for highlighting text found as a result of a search in an ODP report. The default is </u>, to underline the text.

Reference: New Parameter Prompting Settings in the WebFOCUS Administration Console

Choose the *Parameter Prompting* category to view or edit the following setting.

Setting	Description
IBI_AUTOPROMPT_CGI_PROG	Overrides the client path for CGI, ISAPI, or WFServlet for WebFOCUS AUTOSIGNON feature.

Reference: New Performance Settings in the WebFOCUS Administration Console

Choose the *Performance* category to view or edit the following settings.

Setting	Description
WF_OPTIMIZEIO	Enhances request processing for the WebFOCUS Reporting Server.
WF_BURST_OUTPUT	Enables the WFServlet to send simple HTML reports to the WebFOCUS Client faster. If the request is being redirected, this option should be turned off.
WF_DATATRANSFER_SIZE	Sets the amount of data (in MBs) that is sent per request. For example, if the file is 6 MBs and the WF_DATATRANSFER_SIZE is 3, two requests are sent, each with half of the data. If the variable is not specified or is equal or less than 0, no restrictions are enforced. This is used by Developer Studio when sending files to the approot directory

Reference: New Startup Parameter in the WebFOCUS Administration Console

MRUSERLOG is a new setting in ibiweb.cfg. You can choose one of three values:

- Off does not create a log file.
- Daily basis creates a log file on a daily basis.
- Hourly basis creates a log file on an hourly basis.

By default the MR User Log files are created in the *install_drive*: ibi/*client_directory*/wfc/web/cgi directory, where *client_directory* is the name of the directory in which the iWay Client is installed. A location can be specified by the TRACE_LOCATION variable.

The names of the log files have the following format:

`mr_user_MMDD[_HH].log`

where:

user

Is the value of the IBIMR_user variable.

MM

Is a two-digit number to indicate the month. The first month of the year is JANUARY, which is 01.

DD

Is a two-digit number to indicate the day of the month. The first day of the month has the value 01.

[_HH]

Is shown when the HOUR value of the MRUSERLOG variable is chosen. HH is a two-digit number to indicate the hour of the day using the 24-hour clock. For example, at 10:04:15.250 PM HH is 22.

New Format Types in mime.wfs

In this section:

Opening Multiple Excel Spreadsheets

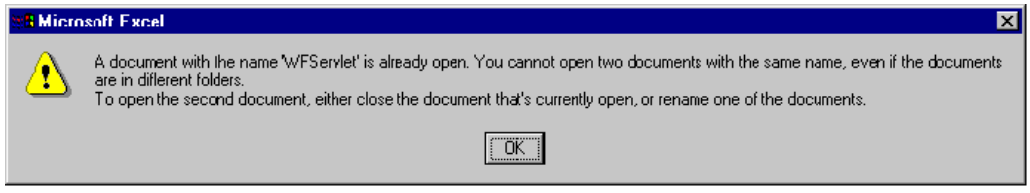
EXL2K PIVOT, Scalable Vector Graphics (SVG), and Portable Network Graphics (PNG) formats are available as redirection settings in the mime.wfs configuration file.

To access the redirect setting using the WebFOCUS Administration Console, click *Configuration* and then *Redirection Settings*.

.xht	application/vnd.ms-excel	ascii	&astran	yes	no	yes	no
.wk1	application/vnd.ms-excel	binary	no	yes	no	yes	no
.txt	text/plain	ascii	no	yes	no	yes	no
.fex	text/plain	ascii	no	yes	no	yes	no
.sty	text/plain	ascii	no	yes	no	yes	no
.css	text/css	ascii	no	yes	no	yes	no
.orw	application/x-odin-int	binary	no	yes	no	yes	no
.wp	text/plain	ascii	no	yes	no	yes	no
.hts	text/plain	ascii	no	yes	no	yes	no
.ftm	application/x-ftm	ascii	no	yes	no	yes	no
.gif	image/gif	binary	no	yes	no	yes	no
.jpeg	image/jpeg	binary	no	yes	no	yes	no
.jpg	image/jpeg	binary	no	yes	no	yes	no
.png	image/png	binary	no	yes	no	yes	no
.svg	image/svg+xml	ascii	no	yes	no	yes	no
.bmp	image/x-MS-bmp	binary	no	yes	no	yes	no

Opening Multiple Excel Spreadsheets

When using Microsoft Excel 2002 or 2003, two or more reports produced by a PCHOLD FORMAT EXL2K command cannot display simultaneously and produce the following message indicating that the spreadsheets cannot be opened at the same time:


Microsoft Excel
A document with the name 'WFServlet' is already open. You cannot open two documents with the same name, even if the documents are in different folders.
To open the second document, either close the document that's currently open, or rename one of the documents.
OK

The mime.wfs file has a new attribute called content_disposition to enable the display of multiple Excel spreadsheets. Instead of displaying in the browser with an Excel plug-in, these reports display in Excel.

Adjust the mime.wfs file located:

- Under the WebFOCUS Client in \ibi\client53\wfc\etc\mime.wfs
- Under Developer Studio in \ibi\srv53\wfs\etc\mime.wfs.

The default for the redirect attribute is 'yes' and the default for the content_type attribute is 'no' for all output types. To open multiple Excel reports, change the redirect attribute value to 'no' and the content_disposition attribute to 'yes' for extensions .xht and .xls:

Default:

```
<!   extension content_type            format redirect translate content_disposition
...
<ADDTYPE> .xht application/vnd.ms-excel ascii  yes      &astran    no
<ADDTYPE> .xls application/vnd.ms-excel binary yes      no         no
```

Change to:

```
<!   extension content_type            format redirect translate content_disposition
...
<ADDTYPE> .xht application/vnd.ms-excel  ascii   no        &astran    yes
<ADDTYPE> .xls application/vnd.ms-excel  binary  no        no         yes
```

These attributes allow users to compare the output of multiple spreadsheets simultaneously. By default, a new Excel session opens in a separate Excel window. This behavior may be different for users who expect Excel to start as Web browser plug-in.

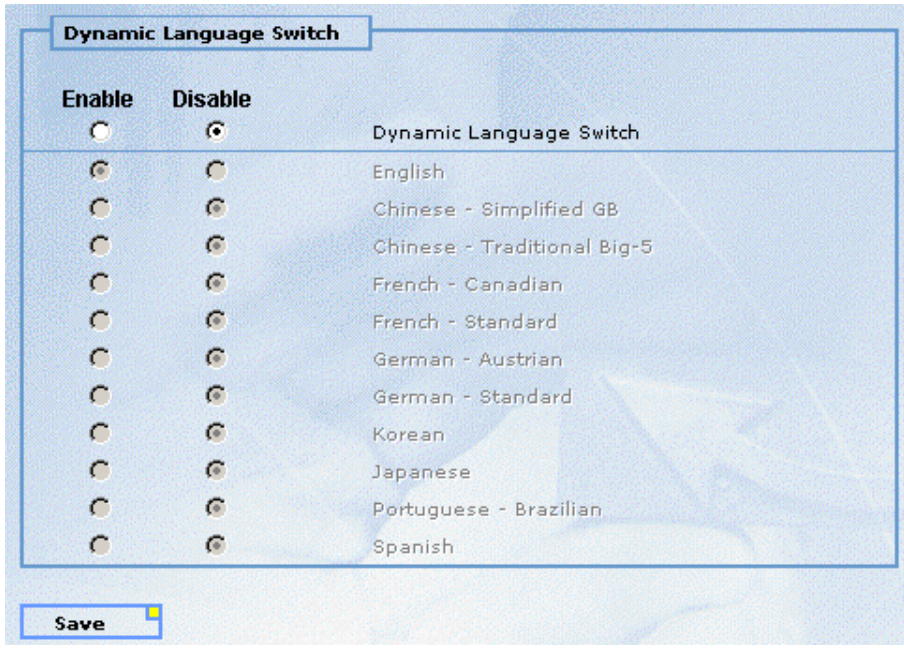
Customizing the Dynamic Language Switch

You can customize which languages are available on the WebFOCUS logon pages.

Procedure: How to Customize the Dynamic Language Switch

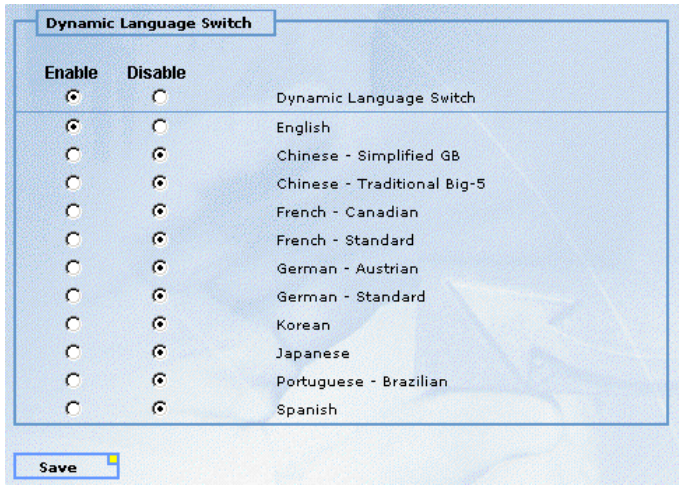
1. Click *Configuration* and then *Dynamic Language Switch*.

   By default, the Dynamic Language Switch window appears with the Dynamic Language Switch disabled.

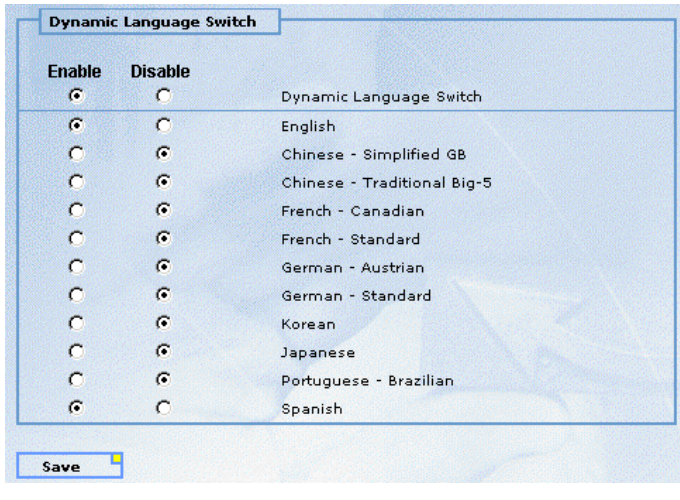


2. Select the *Enable* radio button to enable the Dynamic Language Switch.

   This switch turns on the Select Languages button on all WebFOCUS logon pages. Additionally, enabling this switch activates the Enable radio buttons for the languages. Only the languages that are shipped with WebFOCUS appear.



3. Select the *Enable* radio button for additional languages (for example, Spanish) you want to appear in the Select Languages drop-down list on the WebFOCUS logon pages.



4. Click *Save* to save your changes in the ibi\WebFOCUS53\ibi_html\javaassist\ibimultilanguage.js file.

Note: To remove languages from the Select Languages drop-down list on the WebFOCUS logon pages, repeat these steps but instead click the *Disable* radio button for the language.

Configuring the Client for the Baltic Language

You can configure the client for the Baltic language using the graphical prompts on the console.

For the WebFOCUS Client, navigate to the applicable window by choosing *NLS Settings* under *Configuration* from the WebFOCUS Administration Console navigation pane.

For the iWay Client, navigate to the NLS Configuration Wizard window by choosing *NLS* from the configurator's navigation pane on the Home page.

The code pages are:

CP00921—ISO-8859-4 (Latin 4, Baltic Multilanguage)

CP01257—Windows, Baltic (Latin 7)

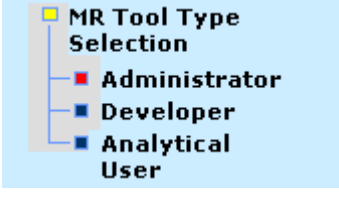
Configuring Managed Reporting Tool Types

You can configure tool types for Managed Reporting Administrators, Developers, and Analytical Users. Selections include:

- HTML or Applet version of Report Assistant and Graph Assistant.
- ReportCaster Scheduling Wizard and HTML User Interface or the Java Web Start-based ReportCaster Development and Administration Interface. This selection is not applicable to Analytical Users as they use the ReportCaster HTML user interfaces.

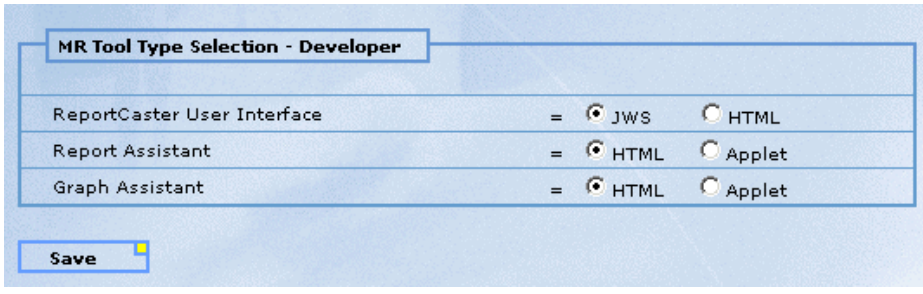
Procedure: How to Configure Managed Reporting Tool Types

1. Click *Utilities*. The MR Tool Type Selection options appear.



2. Select *Administrator*, *Developer*, or *Analytical User*.

   If you select Administrator or Developer, the MR Tool Type Selection window appears with the following defaults.


MR Tool Type Selection - Developer
ReportCaster User Interface = JWS HTML
Report Assistant = HTML Applet
Graph Assistant = HTML Applet
Save

   Note: The ReportCaster User Interface cannot be configured for Managed Reporting Analytical Users, who must use the HTML-based Scheduling Wizard and User Interface.

3. To configure:

   - Managed Reporting Administrators or Developers to use the HTML-based Scheduling Wizard and User Interface, select the *HTML* radio button.
   - The specified Managed Reporting user type to use the Java applet-based Report Assistant or Graph Assistant, select the *Applet* radio button for the appropriate tool.

4. Click *Save* to save your changes.

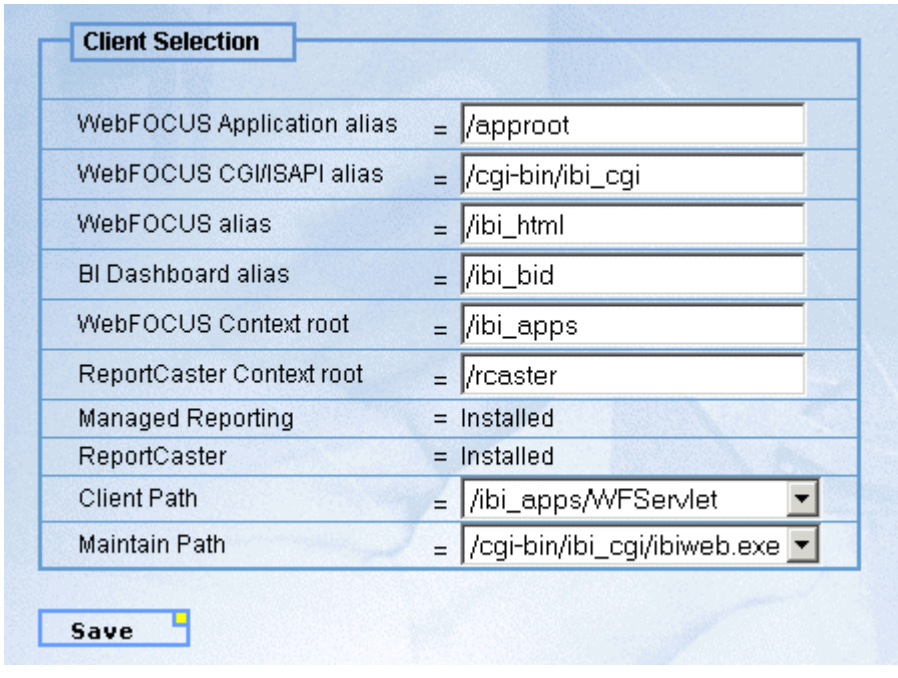
If you are using the WebFOCUS Servlet, you must reload your WebFOCUS Web application in order for your changes to take effect. In addition, users must log out of the Managed Reporting environment and log back in.

Configuring Default Values for the WebFOCUS Client

You can see whether Managed Reporting and ReportCaster are installed, and configure the WebFOCUS and ReportCaster context roots, using the new Utilities menu. Additionally, you can configure the WebFOCUS Client for the CGI, ISAPI, or Servlet options, and specify its default path.

Procedure: How to Configure Default Values for the WebFOCUS Client

1. Click *Utilities* and then *Client Selection*. The Client Selection window appears.



2. Optionally change the following settings:

   - **WebFOCUS Application alias.** The approot on the Web Server. Its initial value is the value specified during installation.
   - **WebFOCUS CGI/ISAPI alias.** The path of the CGI or ISAPI configured on the Web Server. Its initial value is the installation value which was not customizable during installation.
   - **WebFOCUS alias.** The path to the WebFOCUS HTML pages.
   - **BI Dashboard alias.** The path to the Dashboard Web Server resources.
   - **WebFOCUS Context root.** The default context root of the WebFOCUS Web application. By default, this is set to /ibi_apps unless a different context root was specified during installation.
   - **ReportCaster Context root.** The default context root of the ReportCaster Web application. By default, this is set to /rcaster unless a different context root was specified during installation.
   - **Managed Reporting.** Denotes whether Managed Reporting is installed (Installed) or not (Not Installed).
   - **ReportCaster.** Denotes whether ReportCaster is installed (Installed) or not (Not Installed).
   - **Client Path.** From the drop-down menu, specify the path to the WebFOCUS CGI, ISAPI, or Servlet. You can also choose *User Defined*, in which case a text box opens where you can enter a path. If you are using ReportCaster, you must select the Servlet.

     Change the default path of the WebFOCUS CGI, ISAPI, or Servlet. Default values are:

     WebFOCUS CGI: /cgi-bin/ibi_cgi/ibiweb.exe

     WebFOCUS ISAPI: /cgi-bin/ibi_cgi/webapi.dll

     WebFOCUS Servlet: /ibi_apps/WFServlet
   - **Maintain Path.** From the drop-down menu, specify the path to the CGI or ISAPI. You can also choose *User Defined*, in which case a text box opens where you can enter a path. Change the default path of the Maintain CGI or ISAPI. Default values are:

     Maintain CGI: /cgi-bin/ibi_cgi/ibiweb.exe

     Maintain ISAPI: /cgi-bin/ibi_cgi/webapi.dll

3. Click *Save* to save your changes.

   All changes are written to the ibi\WebFOCUS53\ibi_html\javaassist\cgipath.js file.

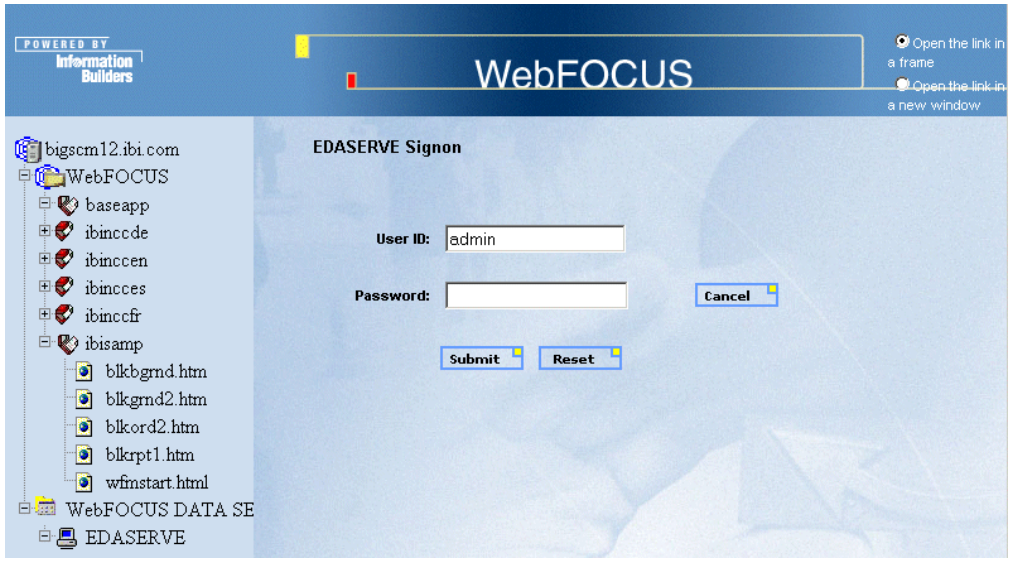
Quick Link to WebFOCUS Applications

The WebFOCUS Applications Quick Link provides access to current applications available on the WebFOCUS Client and WebFOCUS Reporting Server.

The left frame of the WebFOCUS Applications page has a tree of all applications and all WebFOCUS Data Servers configured in the WebFOCUS environment.

You can expand any application to see the HTML pages in the application. If you click on one of the pages, it displays in the right frame.

You can expand the WebFOCUS Data Servers tree to see each node configured in the WebFOCUS environment. If you click on a node, that Reporting Server's logon page opens in the right frame.



Middle Tier DBA Password

The SET PERMPASS=*password* command establishes a password that the user cannot change for access to data sources. You can control whether a PERMPASS is sent to the WebFOCUS Reporting Server with each request, by choosing an option for the IBIF_dbapass_src variable.

For information about setting this variable in the WebFOCUS Administration Console, see *WebFOCUS Data Security Using the Middle Tier DBA Password* in Chapter 10, *Security Enhancements*. For more information about the SET PERMPASS command, see *Non-Overridable User Passwords (SET PERMPASS)* in Chapter 1, *WebFOCUS Reporting Language Enhancements*.

Diagnostics

In this section:

WebFOCUS Client Traces

Verification Tool

The following are new features in the Diagnostics section of the WebFOCUS Administration Console.

WebFOCUS Client Traces

How to:

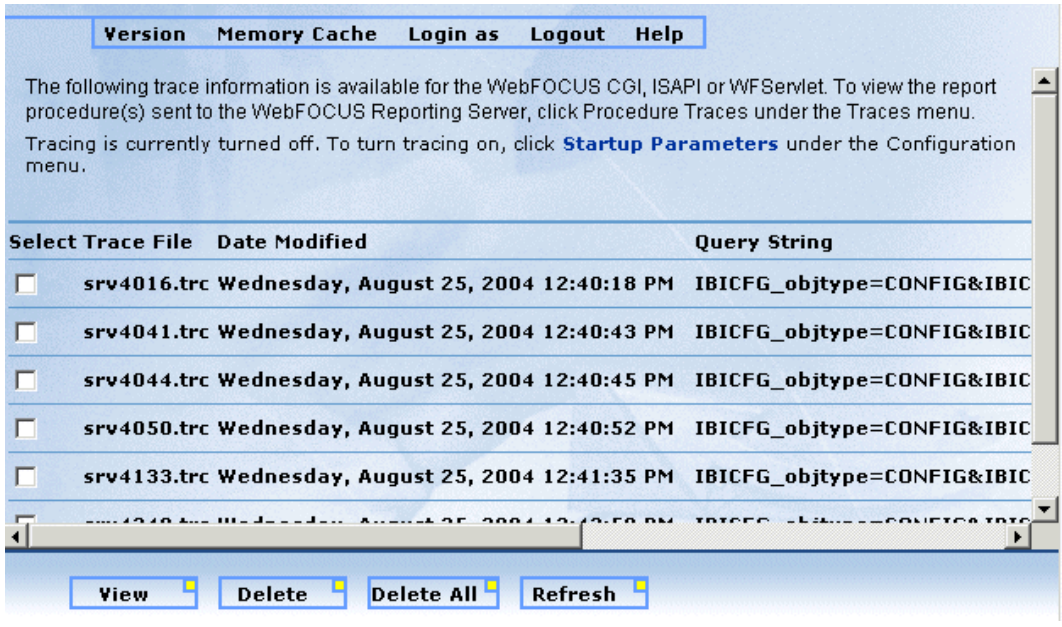
View WebFOCUS Client Trace Files

Trace files listed in the Client Tracing section have a timestamp that indicates when the request ran.

The Diagnostics option in the WebFOCUS Administration Console enables you to view and delete WebFOCUS Client trace files. Trace files enable you to track requests processed by the WebFOCUS Client (CGI, ISAPI, or Servlet). In order to view WebFOCUS Client trace files, you must set the trace parameter ON in the ibiweb.cfg file. You must also specify the location where you want the trace files to be sent using the trace_location parameter in ibiweb.cfg, which can be accessed by clicking *Configuration* and then *Startup Parameters*.

Procedure: How to View WebFOCUS Client Trace Files

Click *Diagnostics* and then *Client Traces* under the Traces menu. The current WebFOCUS Client trace files appear:


Version
Memory Cache
Login as
Logout
Help
The following trace information is available for the WebFOCUS CGI, ISAPI or WFServlet. To view the report procedure(s) sent to the WebFOCUS Reporting Server, click Procedure Traces under the Traces menu.
Tracing is currently turned off. To turn tracing on, click Startup Parameters under the Configuration menu.
Select Trace File
Date Modified
Query String
srv4016.trc Wednesday, August 25, 2004 12:40:18 PM IBICFG_objtype=CONFIG&IBIC
srv4041.trc Wednesday, August 25, 2004 12:40:43 PM IBICFG_objtype=CONFIG&IBIC
srv4044.trc Wednesday, August 25, 2004 12:40:45 PM IBICFG_objtype=CONFIG&IBIC
srv4050.trc Wednesday, August 25, 2004 12:40:52 PM IBICFG_objtype=CONFIG&IBIC
srv4133.trc Wednesday, August 25, 2004 12:41:35 PM IBICFG_objtype=CONFIG&IBIC
View
Delete
Delete All
Refresh

The Trace File column lists the WebFOCUS generated number identifying each trace. A WebFOCUS Servlet trace file is denoted by srvnnnn.trc, while a WebFOCUS CGI or ISAPI trace file is denoted by cg0000nnnn.trc. The Date Modified column provides a timestamp for when the request ran, and the Query String column lists the actual request that was sent to the WebFOCUS Client. You can view or delete a trace file by selecting the trace file and then clicking the appropriate action button (View, Delete, or Delete All). When you click View, the trace file opens in separate browser window, increasing your search speed without interrupting the console session.

Verification Tool

How to:

Use Automatic Verification

Verify WebFOCUS Client Connections and Permissions

Verify ReportCaster Settings

Test the WebFOCUS Reporting Server

Test That You Have Correct Versions of the XML Processing Files

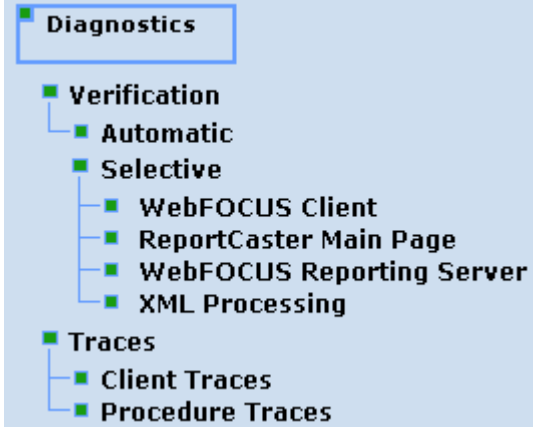
Administrators can test the following components of WebFOCUS using the Verification tool on the Diagnostics menu:

- WebFOCUS Client
- WebFOCUS Reporting Server
- ReportCaster

The *Automatic* option verifies all of the currently configured components. The *Selective* option enables you to choose components to test.

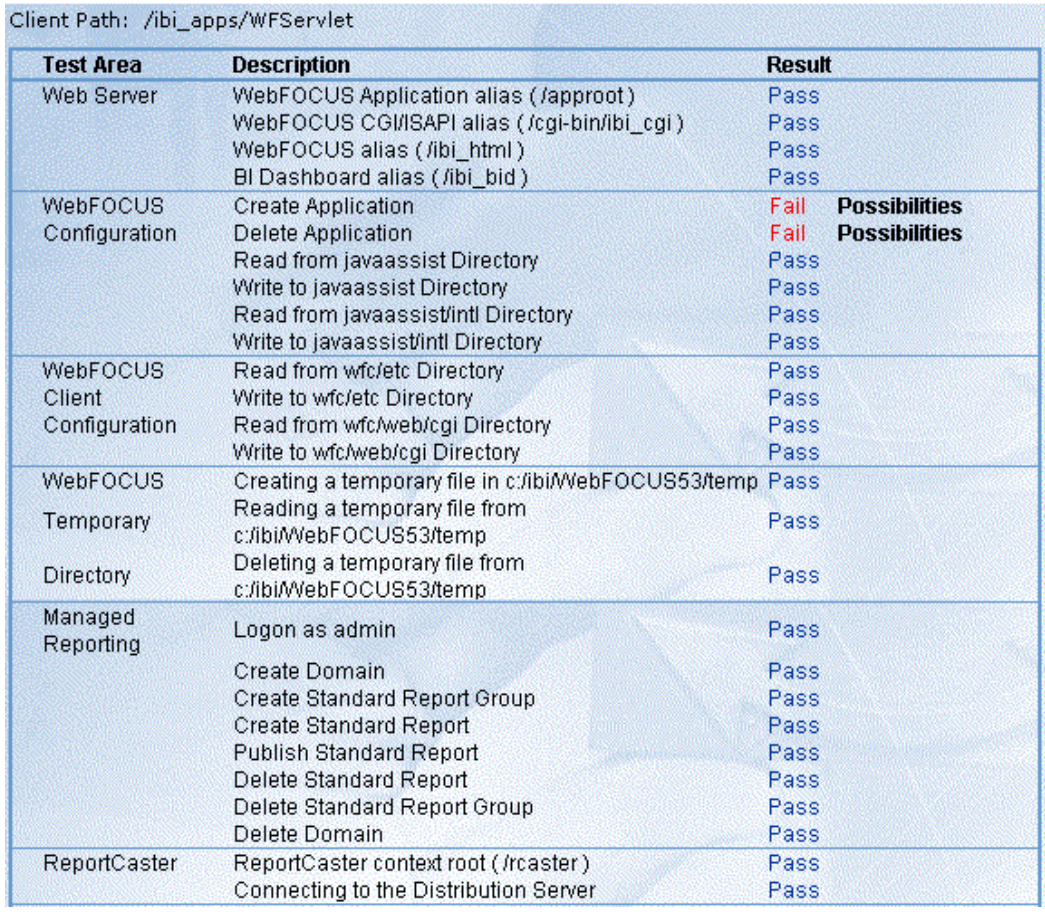
The verification process includes checking Web server aliases and directory permissions for each type of client communication mode (CGI, WFServlet, or ISAPI).

To access the verification tool, click *Diagnostics*.



Procedure: How to Use Automatic Verification

Click *Automatic* on the Verification menu. This enables you to see your directory permissions and test whether you can perform all the common WebFOCUS and WebFOCUS client operations such as creating and deleting applications, logging on as the administrator, reading and writing from the standard directories, creating and deleting domains, and creating and deleting reports.



Client Path: /ibi_apps/WFServlet

Test Area	Description	Result	
Web Server	WebFOCUS Application alias (/approot)	Pass	
	WebFOCUS CGI/ISAPI alias (/cgi-bin/ibi_cgi)	Pass	
	WebFOCUS alias (/ibi_html)	Pass	
	BI Dashboard alias (/ibi_bid)	Pass	
WebFOCUS Configuration	Create Application	Fail	**Possibilities**
	Delete Application	Fail	**Possibilities**
	Read from javaassist Directory	Pass	
	Write to javaassist Directory	Pass	
	Read from javaassist/intl Directory	Pass	
	Write to javaassist/intl Directory	Pass	
WebFOCUS Client Configuration	Read from wfc/etc Directory	Pass	
	Write to wfc/etc Directory	Pass	
	Read from wfc/web/cgi Directory	Pass	
	Write to wfc/web/cgi Directory	Pass	
WebFOCUS Temporary Directory	Creating a temporary file in c:/ibi/WebFOCUS53/temp	Pass	
	Reading a temporary file from c:/ibi/WebFOCUS53/temp	Pass	
	Deleting a temporary file from c:/ibi/WebFOCUS53/temp	Pass	
Managed Reporting	Logon as admin	Pass	
	Create Domain	Pass	
	Create Standard Report Group	Pass	
	Create Standard Report	Pass	
	Publish Standard Report	Pass	
	Delete Standard Report	Pass	
	Delete Standard Report Group	Pass	
	Delete Domain	Pass	
ReportCaster	ReportCaster context root (/rcaster)	Pass	
	Connecting to the Distribution Server	Pass	

Clicking on *Possibilities* tells you what the problem might be and possible solutions.

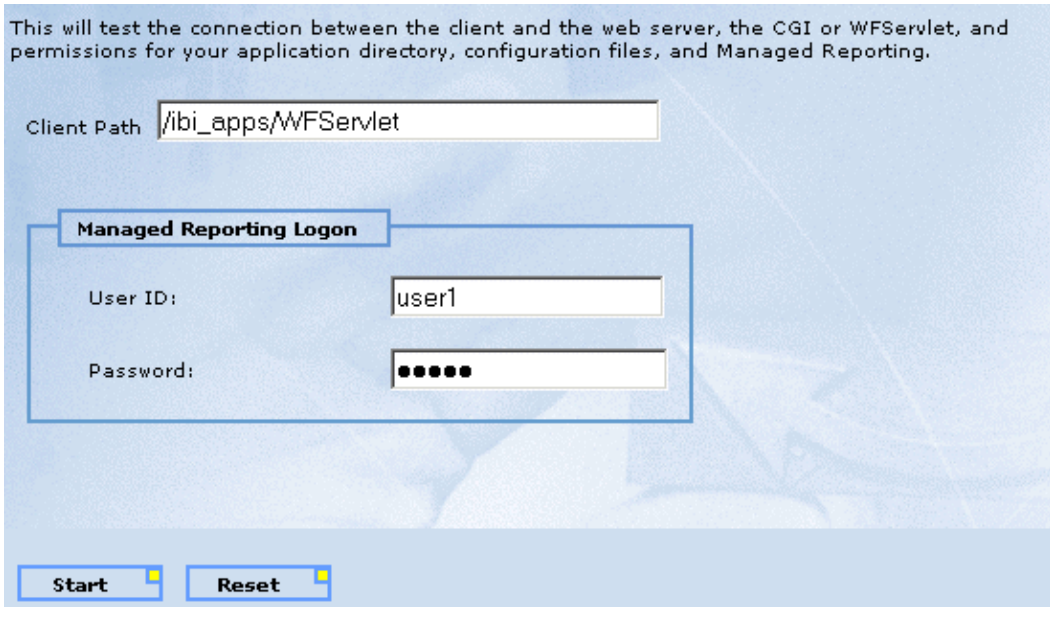
Note: If you run this test (it is the Installation Verification Procedure) immediately after performing the installation procedure, there might be a delay. Check if the WWW Service has fully initialized/started before trying to execute this procedure.

Procedure: How to Verify WebFOCUS Client Connections and Permissions

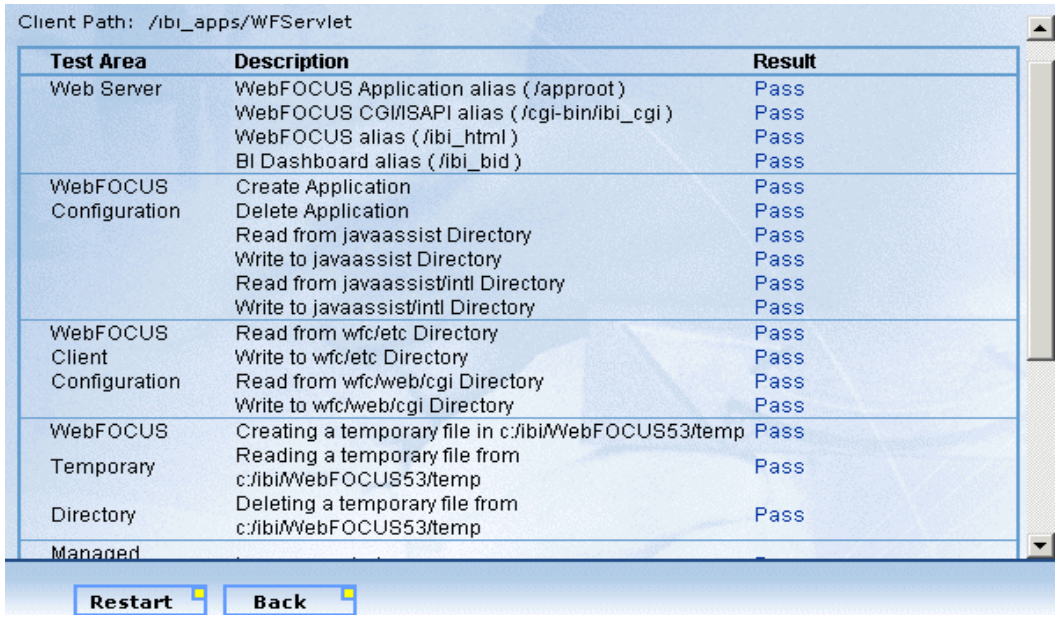
Click *WebFOCUS Client* on the Verification menu to test the connection between the client and the Web server and permissions for your application directory, configuration files, and Managed Reporting.

When you click *WebFOCUS Client* and if Managed Reporting is installed, the Managed Reporting logon section displays in addition to the Client path you are using, either CGI/ISAPI or servlet.

At this point you can change the Client path to test alternate communication methods and verify if they are available or configured properly.


This will test the connection between the client and the web server, the CGI or WFServlet, and permissions for your application directory, configuration files, and Managed Reporting.
Client Path
/ibi_apps/WFServlet
Managed Reporting Logon
User ID:
user1
Password:
Start
Reset

If the Managed Reporting logon screen displayed, enter your ID and password, then click *Start*. The following screen appears showing whether each area exists and is configured properly.



Client Path: /ibi_apps/WFServlet

Test Area	Description	Result
Web Server	WebFOCUS Application alias (/approot)	Pass
	WebFOCUS CGI/ISAPI alias (/cgi-bin/ibi_cgi)	Pass
	WebFOCUS alias (/ibi_html)	Pass
	BI Dashboard alias (/ibi_bid)	Pass
WebFOCUS Configuration	Create Application	Pass
	Delete Application	Pass
	Read from javaassist Directory	Pass
	Write to javaassist Directory	Pass
	Read from javaassist/intl Directory	Pass
	Write to javaassist/intl Directory	Pass
WebFOCUS Client Configuration	Read from wfc/etc Directory	Pass
	Write to wfc/etc Directory	Pass
	Read from wfc/web/cgi Directory	Pass
	Write to wfc/web/cgi Directory	Pass
WebFOCUS Temporary Directory	Creating a temporary file in c:/ibi/WebFOCUS53/temp	Pass
	Reading a temporary file from c:/ibi/WebFOCUS53/temp	Pass
	Deleting a temporary file from c:/ibi/WebFOCUS53/temp	Pass
Managed		

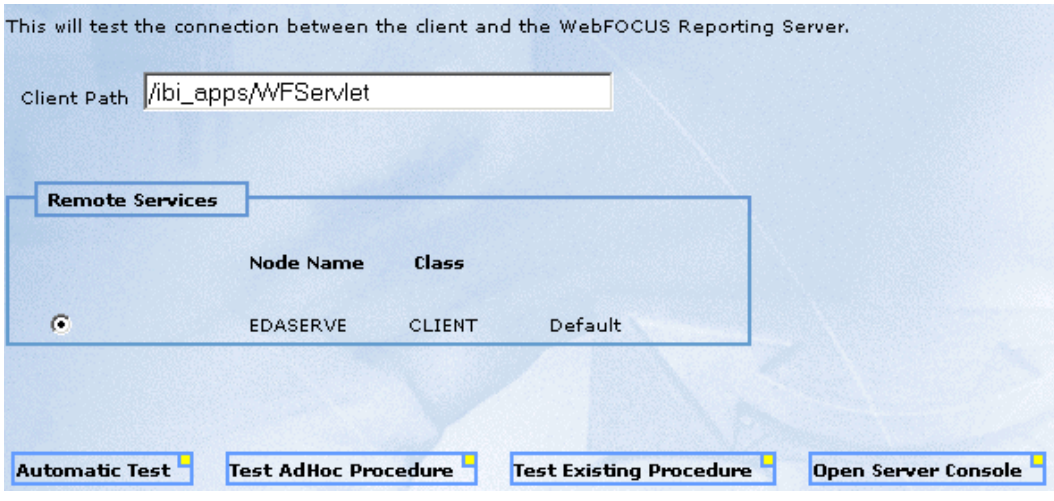
Restart Back

Procedure: How to Verify ReportCaster Settings

Click *ReportCaster* on the Verification menu to open the ReportCaster home page. This verifies that resources in the rcaster Web application are accessible.

Procedure: How to Test the WebFOCUS Reporting Server

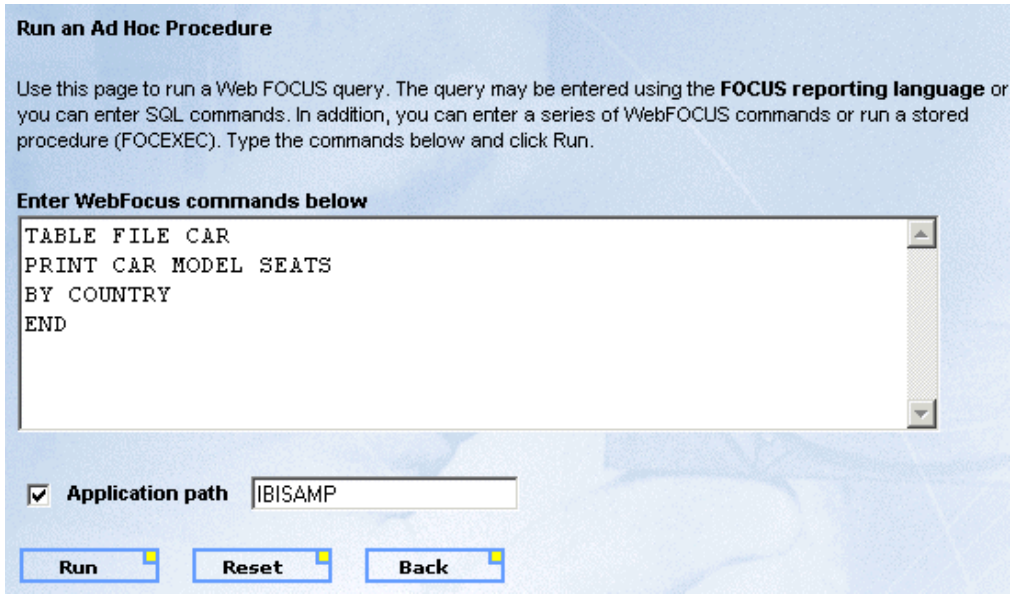
Click *WebFOCUS Reporting Server* on the Verification menu to test the connection between the client and the WebFOCUS Reporting Server. It shows your path (CGI/ISAPI or Servlet) and allows you to select a node.



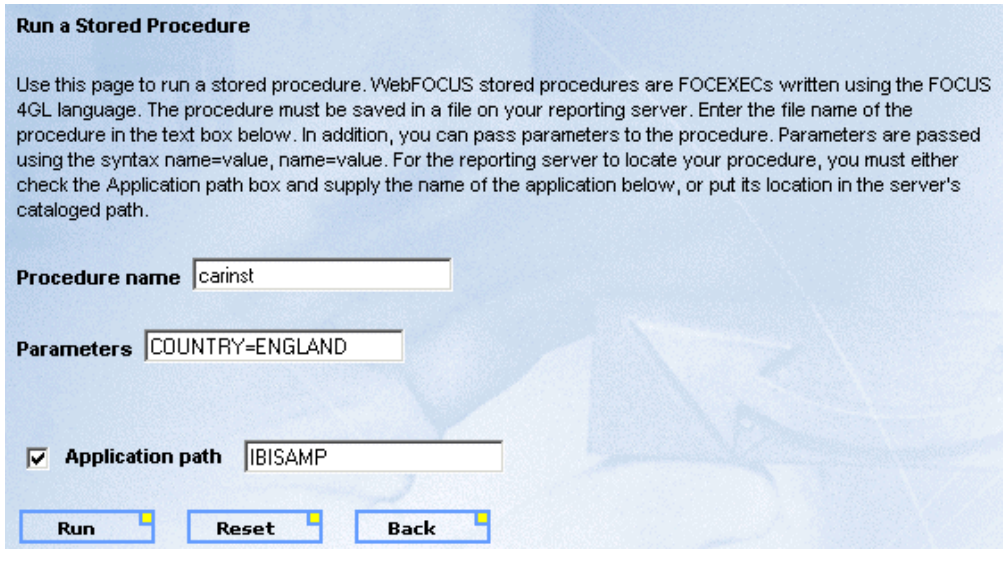
You can then test the following areas:

- **Automatic Test.** This selection checks connections and checks to see if you can list applications under the approot directory, if you can create and delete an application, and if you can run stored procedures and ad-hoc reports. When you are finished, click *Back* to return to the previous screen.

- **Test Ad Hoc Procedure.** This selection opens a window containing a default ad-hoc procedure. You will be prompted for credentials if the server is secure. Click *Run* to execute the procedure, or you can edit the procedure first. You can also change the application path (using APP PATH, not EDAPATH). The procedure can consist of WebFOCUS or SQL commands. When you are finished, click *Back* to return to the previous screen.


Run an Ad Hoc Procedure
Use this page to run a Web FOCUS query. The query may be entered using the FOCUS reporting language or you can enter SQL commands. In addition, you can enter a series of WebFOCUS commands or run a stored procedure (FOCEXEC). Type the commands below and click Run.
Enter WebFocus commands below
TABLE FILE CAR
PRINT CAR MODEL SEATS
BY COUNTRY
END
Application path
IBISAMP
Run
Reset
Back

- **Test Existing Procedure.** This selection lets you enter a procedure name and any necessary parameters. The procedure must be stored on the Reporting Server. You can also change the application path. Click *Run* to execute the procedure. When you are finished, click *Back* to return to the previous screen.

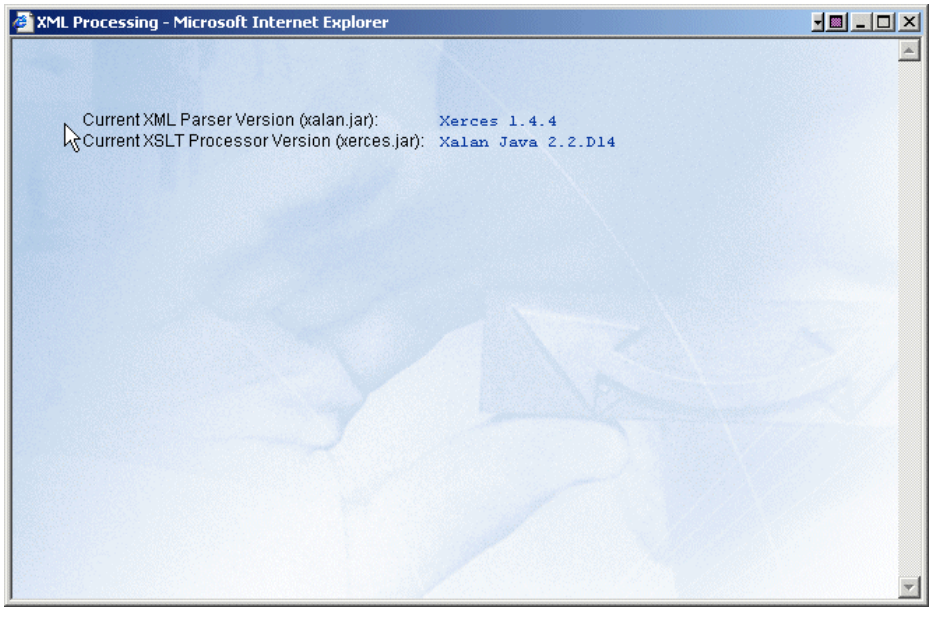

Run a Stored Procedure
Use this page to run a stored procedure. WebFOCUS stored procedures are FOCEXECs written using the FOCUS 4GL language. The procedure must be saved in a file on your reporting server. Enter the file name of the procedure in the text box below. In addition, you can pass parameters to the procedure. Parameters are passed using the syntax name=value, name=value. For the reporting server to locate your procedure, you must either check the Application path box and supply the name of the application below, or put its location in the server's cataloged path.
Procedure name
carinst
Parameters
COUNTRY=ENGLAND
Application path
IBISAMP
Run
Reset
Back

- **Open Server Console.** This selection opens the Reporting Server's console.

Procedure: How to Test That You Have Correct Versions of the XML Processing Files

Specific versions of the xerces.jar and xlan.jar files are required for features such as OLAP and auto prompting. If you are not using the correct versions of these files, problems can occur.

To check that you are using the correct versions, select XML Processing from the Verification menu of the Diagnostics section. A Window opens that lists the versions found:


XML Processing - Microsoft Internet Explorer
Current XML Parser Version (xalan.jar): Xerces 1.4.4
Current XSLT Processor Version (xerces.jar): Xalan Java 2.2.D14

If the versions are not the required ones, a message displays specifying which versions are required and where they can be obtained. For example:

```
Please update your current installation to include the required version
of these files. You can obtain the files from the
D:\ibi\WebFOCUS53\webapps\webfocus53\WEB-INF\lib directory.
```

Configuring Managed Reporting Realm Driver Authentication

In this section:

Setting the REPOSITORY_DRIVER Variable

Configuring Realm Driver Authentication Properties

How to:

Turn on Realm Driver Tracing

Configure Authentication Properties in mrrealm.cfg

Reference:

LDAP and Active Directory Properties

WebFOCUS Reporting Server Properties

You can use the WebFOCUS Administration Console to configure the Managed Reporting Realm Driver to authenticate against LDAP, Active Directory, or the WebFOCUS Reporting Server.

The configuration process using the WebFOCUS Administration Console consists of two steps:

1. Setting the value of the REPOSITORY_DRIVER variable.
2. Configuring the authentication properties in the mrrealm.cfg file.

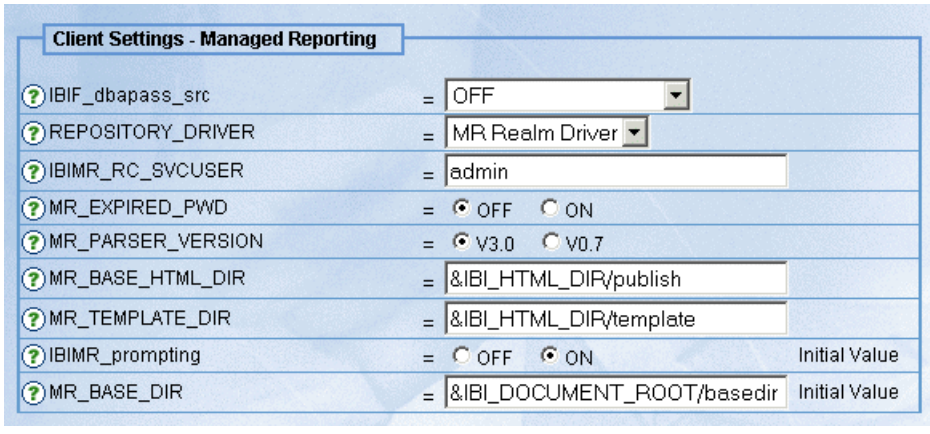
Setting the REPOSITORY_DRIVER Variable

To configure the Managed Reporting Realm Driver, you must first select *MR Realm Driver* as the value of the REPOSITORY_DRIVER variable in the WebFOCUS Administration Console:

1. In the WebFOCUS Administration Console, choose the *Managed Reporting* section on the Configuration menu.

   The Managed Reporting settings display.

2. For REPOSITORY_DRIVER, select *MR Realm Driver*:


Client Settings - Managed Reporting
IBIF_dbapass_src = OFF
REPOSITORY_DRIVER = MR Realm Driver
IBIMR_RC_SVCUSER = admin
MR_EXPIRED_PWD = OFF ON
MR_PARSER_VERSION = V3.0 V0.7
MR_BASE_HTML_DIR = &IBI_HTML_DIR/publish
MR_TEMPLATE_DIR = &IBI_HTML_DIR/template
IBIMR_prompting = OFF ON Initial Value
MR_BASE_DIR = &IBI_DOCUMENT_ROOT/basedir Initial Value

3. Click *Save* to save this setting.

   When you save this value, the following message reminds you to configure the driver:

```
You have selected the MR Realm Driver. To configure its properties,
update the settings in the MR Realm Driver section under the
Configuration menu.
```

Configuring Realm Driver Authentication Properties

Before configuring the Managed Reporting Realm Driver to authenticate against LDAP, Active Directory, or the WebFOCUS Reporting Server, make sure you have set the REPOSITORY_DRIVER variable to *MR Realm Driver*.

Note that you can manually edit the mrrealm.cfg file to configure relational DBMS authentication and external authorization to LDAP, Active Directory, or a relational DBMS.

For helpful support information about the Managed Reporting Realm Driver, see http://techsupport.informationbuilders.com/realm/toc.html.

To configure the Realm Driver:

- Turn on tracing.
- Edit the authentication properties in the mrrealm.cfg file.

If you attempt to configure these properties without first setting the REPOSITORY_DRIVER variable to the *MR Realm Driver*, the following message displays:

```
The REPOSITORY_DRIVER parameter must be set to MR Realm Driver. To change
the current setting, click Managed Reporting under Client Settings of the
Configuration menu
```

Procedure: How to Turn on Realm Driver Tracing

1. Click *General* under MR Realm Driver. The Realm Driver Settings - General panel displays.

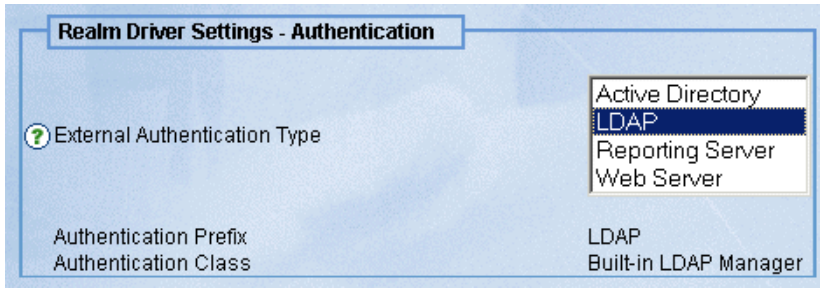
2. Select the *True* radio button.
3. Enter the fully-qualified directory path that is to contain the log file(s). Note that the directory delimiter must be a forward slash (/), even on Windows.
4. Click *Save* to save these settings to mrrealm.cfg.

Trace files are created in the specified directory with names of the form mrrealm_*yyyy_mm_dd*.log. The Realm Driver log service writes useful troubleshooting messages to the file. It appends new messages to the existing information in the file.

Important: Tracing is only recommended for troubleshooting as it affects performance. When you are confident that the Realm Driver is configured properly, select *False* for the trace option and reload your Web application.

Procedure: How to Configure Authentication Properties in mrrealm.cfg

Click *Authentication* under MR Realm Driver. The Realm Driver Settings - Authentication panel displays.



Select one of the following authentication options:

- **Active Directory -** The panel is updated and the following properties will be configured in the mrrealm.cfg file:

```
WEB.AUTHENTICATION=false
AUTHENTICATION.CLASS=ibix.service.WFMRX_LdapManager
AUTHENTICATION.PREFIX=AD
```

- **LDAP -** The panel is updated and the following properties will be configured in the mrrealm.cfg file:

  ```
  WEB.AUTHENTICATION=false
  AUTHENTICATION.CLASS=ibix.service.WFMRX_LdapManager
  AUTHENTICATION.PREFIX=LDAP
  ```

- **WebFOCUS Reporting Server -** The panel is updated and the following properties will be configured in the mrrealm.cfg file:

  ```
  WEB.AUTHENTICATION=false
  AUTHENTICATION.CLASS=ibix.service.WFMRX_DBManager
  AUTHENTICATION.PREFIX=WFRS
  ```

- **Web Server -** The panel is updated and the following properties will be configured in the mrrealm.cfg file:

  ```
  WEB.AUTHENTICATION=true
  AUTHENTICATION.CLASS=
  AUTHENTICATION.PREFIX=
  ```

Except for the Web Server option, you must configure additional properties. All of the property names associated an each authentication option start with the authentication prefix value. This enables the Realm Driver to access the appropriate settings for the option selected.

Reference: LDAP and Active Directory Properties

Edit the following properties to configure LDAP or Active Directory authentication in the mrrealm.cfg file:

`HOST`

Is the host name or IP address of your directory server. This value is written to the LDAP.HOST or AD.HOST property, depending on the AUTHENTICATION.PREFIX setting.

`PORT`

Is the port on which the directory server listens. By default, it is set to 389, the default LDAP port. This value is written to the LDAP.PORT or AD.PORT property, depending on the AUTHENTICATION.PREFIX setting.

`SECURECONNECTION`

Determines whether the connection is encrypted. A value of false means no encryption. A value of true means SSL encryption is used. Typically, SSL requires additional setup on the directory server (for example, a certificate). See your directory server documentation for more information. This value is written to the LDAP.SECURECONNECTION or AD.SECURECONNECTION property, depending on the AUTHENTICATION.PREFIX setting.

`REQUIRECREDENTIALS`

Specifies whether to perform an anonymous or credential-based search for the user in the directory as a preliminary step in authenticating the user. The default value for LDAP is false, and the default value for Active Directory is true. This value is written to the LDAP.REQUIRECREDENTIALS or AD.REQUIRECREDENTIALS property, depending on the AUTHENTICATION.PREFIX setting.

For example, a user John Doe enters the user Id JD123 and his password on the BI Dashboard logon page.

If REQUIRECREDENTIALS=false the Realm Driver first performs an anonymous search to locate John Doe's distinguished name (DN), for example, "cn=Doe\, John,ou=People,dc=informationbuilders,dc=com". Next, the Realm Driver performs an LDAP bind with the user's DN and password in order to authenticate him.

If REQUIRECREDENTIALS=true, the first connection is made with a service account's DN with sufficient rights to search the directory and locate user entries.

Note: Active Directory does not allow an anonymous search.

`SECURITY.PRINCIPAL`

Contains the DN of a service account with sufficient access rights to locate user entries in the directory. This value is used only when REQUIRECREDENTIALS=true. This value is written to the LDAP.SECURITY.PRINCIPAL or AD.SECURITY.PRINCIPAL property, depending on the AUTHENTICATION.PREFIX setting.

`SECURITY.CREDENTIALS`

Contains the password of the service account. This value is used only when REQUIRECREDENTIALS=true. This value is written to the LDAP.SECURITY.CREDENTIALS or AD.SECURITY.CREDENTIALS property, depending on the AUTHENTICATION.PREFIX setting.

`USER.BASE`

Specifies the root DN where the user search starts. For performance reasons you should set this value as close as possible to your user entries. The default value for LDAP is ou=People,dc=*domain*,dc=*com*, and for Active Directory is cn=Users,dc=*domain*,dc=*com*. You must replace this with an appropriate DN for your directory. This value is written to the LDAP.USER.BASE or AD.USER.BASE property, depending on the AUTHENTICATION.PREFIX setting.

`USER.SCOPE`

Specifies the scope of the search. Valid values are:

`subtree` indicates that the scope is a subtree rooted at start node. This is the default value.

`onelevel` indicates the immediate children of start node only.

This value is written to the LDAP.USER.SCOPE or AD.USER.SCOPE property, depending on the AUTHENTICATION.PREFIX setting.

`USER.CLASS`

Specifies the object class used when searching for user entries. The default value for LDAP is inetOrgPerson, and for Active Directory is User. This value is written to the LDAP.USER.CLASS or AD.USER.CLASS property, depending on the AUTHENTICATION.PREFIX setting.

`USER.ATTRIBUTE`

Specifies the LDAP attribute used when searching for user entries. The default value for LDAP is uid, and for Active Directory is sAMAccountName. This value is written to the LDAP.USER.ATTRIBUTE or AD.USER.ATTRIBUTE property, depending on the AUTHENTICATION.PREFIX setting.

One possible reason to change the default value would be to allow users to log on to Managed Reporting with an email address instead of user ID. In this case, you might change the value to mail (if this corresponds with the name of the appropriate attribute in your directory).

After editing the properties, click *Save* to save the values. If you want to reestablish the default values in mrrealm.cfg, click *Restore Default Values*.

Important: You must reload the WebFOCUS Web application whenever making changes to the mrrealm.cfg file.

Reference: WebFOCUS Reporting Server Properties

Edit the following properties to configure WebFOCUS Reporting Server authentication in the mrrealm.cfg file:

`CLASS`

Is the class used by WFServlet to connect with the WebFOCUS Reporting Server. The value is set to *ibi.jlink.EdaDriver* and should not be changed. This value is written to the WFRS.CLASS property.

`URL`

Is the connection information used to connect with the WebFOCUS Reporting Server. The value is set to jdbc:eda://*hostname:port*;SERVER=

Update *hostname:port* to the host name and port for your WebFOCUS Reporting Server. This value is written to the WFRS.URL property.

If your Reporting Server is on MVS, you must supply the service name associated with your server after the SERVER= keyword. For information about setting the service name for MVS, see your iWay *Server Configuration and Operations for MVS* manual.

Note: If your Reporting Server is on any other platform, including OS/390 UNIX, leave SERVER= unchanged. You must not remove the SERVER= keyword.

After editing the properties, click *Save* to save the values. If you want to reestablish the default values in mrrealm.cfg, click *Restore Default Values*.

Important: You must reload the WebFOCUS Web application whenever making changes to the mrrealm.cfg file.

Portuguese Localized Version

A localized version is a software product in which the entire user interface (for example, menus, utilities, and online Help) is displayed in a particular language.

A localized version of WebFOCUS in Portuguese (Brazilian) is available.

Netscape Support

In this section:

Self-Service Features

Managed Reporting Features

Dashboard Features

Example:

Selecting the DIF Filetype

WebFOCUS 5.3 supports Netscape 7.1 for self-service reporting and Managed Reporting users using the Dashboard user interface. All types of reports can be run but there are known issues with OLAP reports, Table of Contents, Knowledge Mapping, on-demand paging reports, and drill-downs in Excel 2000 reports.

From Dashboard, the HTML Report Assistant, HTML Graph Assistant, end-user Schedule Wizard, HTML-based ReportCaster and Library tools, the Business Intelligence Dashboard View Builder, and HTML Text Editor are supported. Developer Studio, all administrative consoles, and Managed Reporting administration tools are not supported.

The following table lists the support capabilities of WebFOCUS features and tools.

Note that support is for Netscape release 7.1, not 7.0.2.

Self-Service Features

Feature	Uses the following Web technologies…	Supported in Netscape 7.1
Basic real-time reporting with plain HTML output. For example HTML 3.x.	Basic HTML markup GIF Graphics Frameset support	Yes
Server-side graphics without drill-downs.	GIF Graphics	Yes
Server-side graphics with drill-downs.	GIF Graphics Image Maps	No
Java based graphics.	Browser JRE/JVM level 1.1.7	Yes, requires Sun JVM Plug-in
Acrobat (PDF) output	PDF MIME type support	Yes
Excel 2000 output	Excel MIME type support	Yes

Feature	Uses the following Web technologies…	Supported in Netscape 7.1
CLASS-based formatting for WebFOCUS reports Style Sheets	Cascading Style Sheets	Yes
Drill-downs in Excel 2000 reports.	Ability to set helper context	No
On-Demand Paging (WebViewer).	JavaScript level Frameset support	Yes
Table of Contents	JavaScript Cascading Style Sheets Document Object Model 1.0	No
Knowledge Mapping	Cascading Style Sheets JavaScript	No
OLAP Control Panel	Java applets JavaScript	No
OLAP Pane	Cascading Style Sheets JavaScript Document Object Model 1.0	No
Report Caster Console		No
Report Library	JavaScript	Yes
Report Assistant – HTML version as standalone.	JavaScript Value retrieval in XML format	Yes
PNG graphs		Yes
SVG graphs		Yes, requires Adobe plug-in version 6.0.
WebFOCUS Server Console		No
WebFOCUS Client Console		No

Managed Reporting Features

Feature	Uses the following Web technologies...	Supported in Netscape 7.1
Admin applet (Domain Builder)	Java applet	No
End-user applet (Domains)	Java applet	No
User Administration applet	Java applet	No
Join applet	Java applet	No
Report Assistant and Graph Assistant applet	Java applet	No
Text Editor applet	Java applet	No

Dashboard Features

Feature	Uses the following Web technologies…	Supported in Netscape 7.1
Domain Tree		Yes
Role Tree		Yes
Launch Block, List Block, Folder Block, Output Block		Yes
Run reports		Yes
Run “Deferred only” reports		Yes
On-Demand Paging (WebViewer) reports		Yes, except controls are not visible in a launch or output block.
OLAP reports		No
View Builder/Personalize	JavaScript	Yes
HTML Report Assistant, HTML Graph Assistant	JavaScript	Yes

Feature	Uses the following Web technologies…	Supported in Netscape 7.1
ReportCaster, Report Library (HTML End-user user interface)	JavaScript	Yes
Schedule Wizard		Yes
Deferred Status	JavaScript	Yes
Domain Search		Yes, except for previous days and previous months.
HTML Text Editor		Yes, with limited toolbar options.

Note:

- For On-Demand Paging reports, the control panel may not be visible in launch or output blocks, depending on the number of blocks on the Dashboard page. You can maximize the report (opens a new window) to see the control panel.
- For OLAP reports, the following known issues occur: the sorting does not work, sometimes column titles overlap or are truncated, and drill-down does not work. The OLAP button and the control panel do not display.
- In the advanced domain search in Dashboard, the "during the previous days and months" option does not filter the data properly.
- For some file types, Netscape does not use the associated file type definitions that are specified for your PC.

Example: Selecting the DIF Filetype

1. In the Edit menu, select Preferences. The Preferences dialog box opens.
2. In the Category box, select Navigator and then Helper Application.
3. If application/x-diff does not already display in the File Types list, select New Type.
4. Select the following:
   - For MIME Type: application/x-diff
   - For Extension: DIF
   - For "When a file of this type is encountered": "Open it with"
   - Navigate to select Microsoft Excel. For example,

     ```
     C:\Program Files\Microsoft Office\Office10\EXCEL.EXE
     ```

   Note: You must exit out of Netscape and restart it so that it will not pick a helper application when running a WebFOCUS request for an extension that is listed the helper application definition. After restarting, you can run the WebFOCUS request again and there will be no additional prompting. The report results will display within the Netscape browser.

CHAPTER 7

WebFOCUS Graphics

Topics:

- What Is Scalable Vector Graphics?
- Viewing Scalable Vector Graphics
- Portable Network Graphics
- Virtual Coordinate System
- Implementing API Calls

WebFOCUS includes significant enhancements for users of business graphics. New chart types such as Pareto, Waterfall, Cylinder, Cone, Globe, and Funnel extend the robust presentation styles already available, and Gauges provide a powerful way to display Key Performance Indicators. The ability to place graphs in PDF files by simply clicking a check box makes creation of compound documents containing business graphics seamless and easy.

New Java technology produces graphs with higher resolution and fewer jagged edges. New output formats are available as well. You can now create graphs as high resolution Portable Network Graphics (PNG) images, which use a palette of 64-million colors. In addition, graphs output as Scalable Vector Graphics (SVG) files produce boardroom-quality images for print or display and eliminate jagged edges altogether.

The WebFOCUS graph engine has been enhanced with intelligent object placement that ensures that graph elements are appropriately sized and positioned so that overprinting is eliminated and graphs automatically look sharp.

These topics describe all of the features for Scalable Vector and Portable Network Graphics.

What Is Scalable Vector Graphics?

Scalable Vector Graphics (SVG) is a file format, based on Extensible Markup Language (XML), that enables Web application developers to design powerful, interactive graphical images.

SVG was introduced, and continues to be developed, by the World Wide Web Consortium (W3C), a non-profit group of corporations that work together to create new, open standard products for the Web. Open standard products are not proprietary—they do not belong to any company or individual. Other open standard products created by the W3C are HyperText Markup Language (HTML) and XML.

The following table compares vector graphs with bitmapped graphs, which have been used traditionally in Web applications until now.

Vector Graphs	**Bitmapped Graphs**
SVG	GIF, JPEG, PNG
Describe shapes and paths	Provide information about every pixel
Are compact and generate high quality images on any media	Are bulky and sometimes generate poor quality images
Are scalable and produce high quality images regardless of resolution	Show progressive, jagged edges, known as the staircase effect, when displayed at lower resolutions or stretched

SVG has several other advantages over bitmapped graphs:

- You can zoom in on any part of an SVG graph, always seeing a clear image.
- You can perform searches and make edits on any part of an SVG graph because it is actually composed of text.
- You can interactively respond to a variety of user actions with highlighting, pop-ups, special effects, audio, and animation.
- SVG files are usually much smaller and easier to compress than bitmapped files.
- SVG supports 16 million colors rather than 256 colors. It also supports industry-wide initiatives for achieving Web-based color consistency across systems.

An SVG graph is created with underlying XML code, which also has benefits for development on the Web. SVG:

- Works well across platforms, output resolutions, and methods of representing colors.
- Is supported in virtually any language for global implementation in many locales.
- Is compatible with any scripting language (for example, JavaScript) or procedural language (for example, WebFOCUS) and uses data from any type of data source, from ASCII to relational.

Viewing Scalable Vector Graphics

To view SVG graphs in a browser, all you need is a free plug-in that you can download from Adobe®, called the SVG Viewer. The SVG Viewer is available for Netscape® and Microsoft® Internet Explorer.

For more information about downloading and using this tool, go to the Adobe Web site and search for information on the SVG Viewer.

You can also embed SVG graphs in PDF documents. Viewing these documents requires only the Adobe PDF Viewer—no browser plug-in is necessary.

Portable Network Graphics

In addition to SVG, WebFOCUS gives you the option of using the Portable Network Graphics (PNG) file format. Since a plug-in viewer is required for browser display of the SVG format, you may decide to use PNG format.

PNG graphs are bitmapped and can support 16 million colors. In addition, they have lossless compression (data is decompressed 100% back to the original). Therefore, saving, altering, and resaving a PNG does not degrade its overall quality.

For these reasons, PNG graphs are superior to GIF and JPEG graphs, and you can display them in virtually any modern browser. The major difference between PNG and SVG is that SVG is vector based and uses XML as the file format.

Virtual Coordinate System

In this section:

A Look at Coordinate Systems: Cartesian and Virtual

How Does WebFOCUS Graphics Use the Virtual Coordinate System?

Example:

Using Virtual Coordinates to Control Font Size

Plotting a Frame Rectangle in the Default Applet Rectangle

Plotting a Graph With a Three-dimensional Effect

Plotting a Legend Rectangle

Whether you save your graphs in SVG or PNG format, you will plot them on a Cartesian grid using the Virtual Coordinate System. The Virtual Coordinate System provides a way to position and size graph elements relative to the area in which the graph is displayed. Changing the aspect ratio (ratio of width to height) of the area results in the necessary adjustments to the graph elements, creating a graph that fits properly in the space allotted for it.

This feature has many benefits, including the ability to set font size with virtual coordinates, ensuring that text appears proportionate regardless of the size of a graph.

The Virtual Coordinate System provides data visualization in WebFOCUS applications widely distributed on the Web to users with different display technologies and output devices.

A Look at Coordinate Systems: Cartesian and Virtual

This topic takes a look at the basics of coordinate systems to help you understand how you will create WebFOCUS graphs.

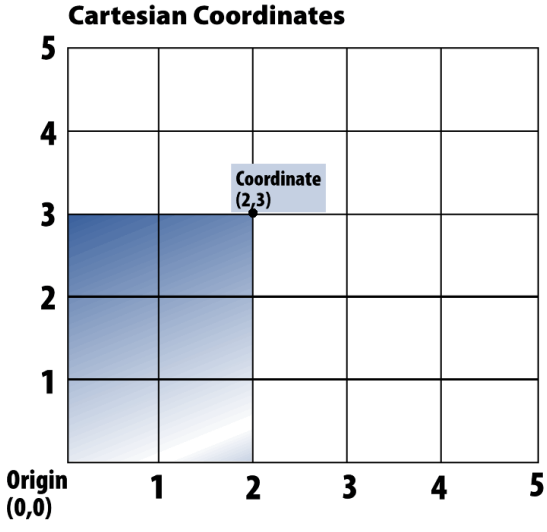
The **Cartesian Coordinate System** consists of two number lines perpendicular to each other. Called axes, the horizontal number line is the X-axis and the vertical number line is the Y-axis.

The axes form a plane (typically, a flat surface). With the Cartesian Coordinate System, you assign a pair of numbers, designated as (X,Y), to identify a point on the plane. The first number is the X-coordinate and the second number is the Y-coordinate; together, the numbers are the coordinates of the point.

The coordinate point at which the two axes intersect is the origin (0,0).

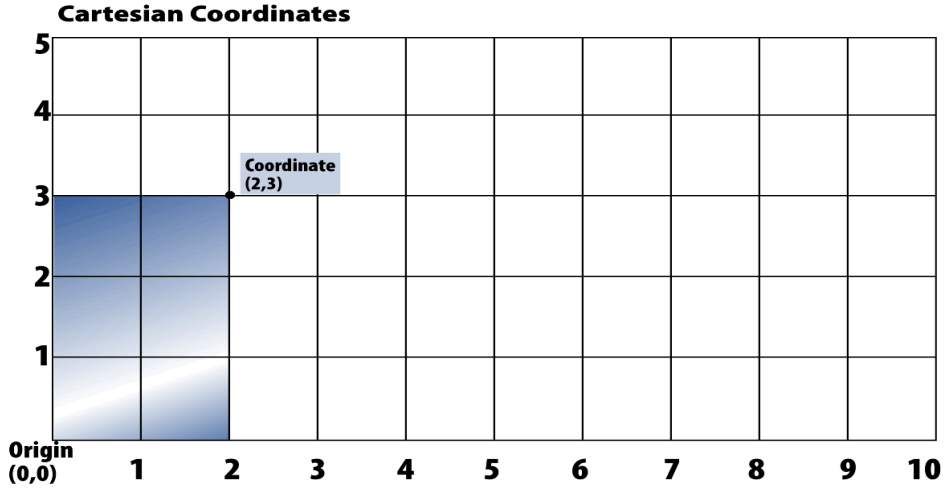
The following diagram plots a point on a plane. The Cartesian coordinates of the point are (2,3). Starting at the origin (0,0), the first number represents 2 units to the right of the origin on the X-axis, and the second number represents 3 units up on the Y-axis.

Tip: The two Cartesian axes divide a plane into four quarters, called quadrants. For simplicity, the diagrams show only one quadrant.



If we double the width of the grid—that is, change its aspect ratio (the ratio of width to height)—the number of coordinate points on the X-axis increases to 10. The space between coordinate points remains the same; the space between coordinate point 0 and coordinate point 1 (or between 1 and 2, 2 and 3, and so on) does not change between grids.

As a result, when we plot (2,3) on the wider grid, the 2 units to the right of the origin are the same width as before, and the shaded area is unchanged. In fact, it will always be rendered exactly the same regardless of the size and shape of the grid.

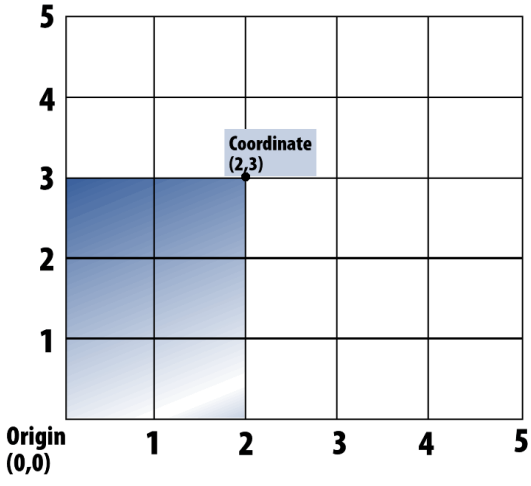


The **Virtual Coordinate System** used by WebFOCUS Graphics is based on a Cartesian grid. As shown before, the first diagram plots a point with Cartesian coordinates (2,3) on a Cartesian grid. This time, however, when we double the width of the grid (second diagram), the number of coordinate points on the X-axis remains 5, and, consequently, the space between coordinate points increases.

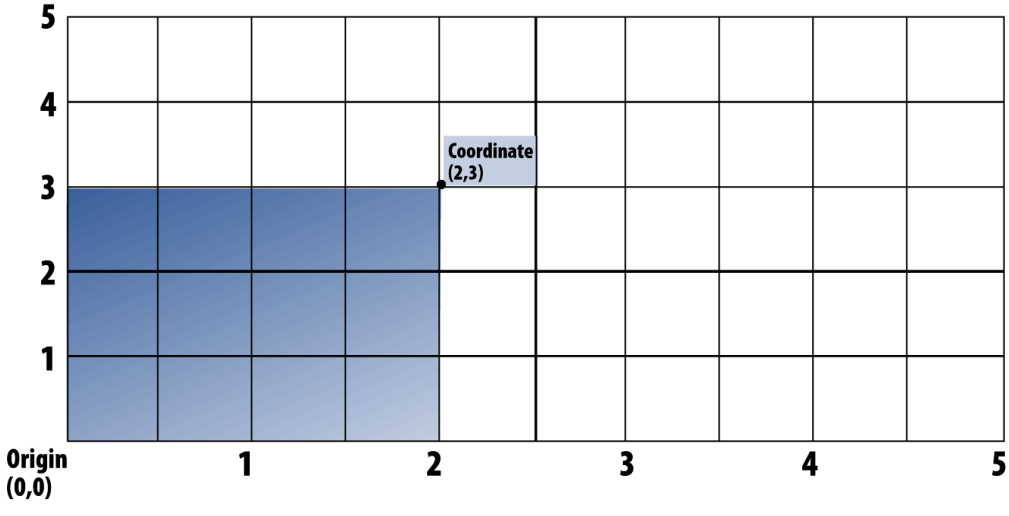
In the Virtual Coordinate System, the number of coordinate points on both axes is constant regardless of the size of the grid.

As a result, when we plot (2,3) on the wider "virtual" grid, the 2 units to the right of the origin are doubled in width from before. The Virtual Coordinate System, illustrated in the second diagram, results in the proportionate display of the shaded area in the increased width of the grid; it is stretched horizontally. The width of the shaded area will always change relative to the width of the grid.

Cartesian Coordinates



Virtual Coordinates



Example: Using Virtual Coordinates to Control Font Size

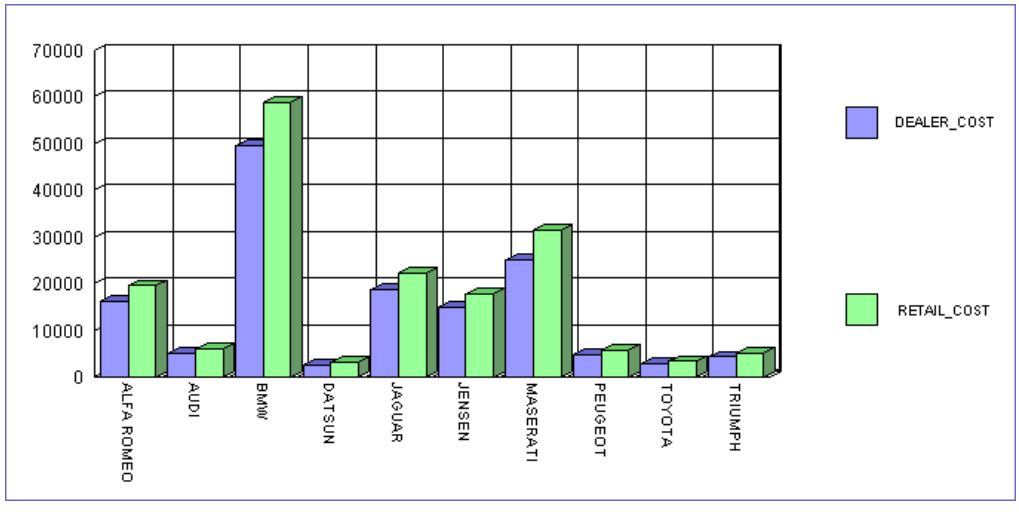
The following graphs are generated by a WebFOCUS procedure. The specific API calls that created these graphs are described in later sections of this manual.

This example illustrates the results you can achieve using virtual coordinates to control font size. The font size changes relative to the designated size of the area in which the graph is displayed (the graph output area).

In the graph request:

- Absolute coordinates control the font size for the X-axis and Y-axis labels.
- Virtual coordinates control the font size for the legend.
- The width and height of the graph output area are controlled by two WebFOCUS graph commands.

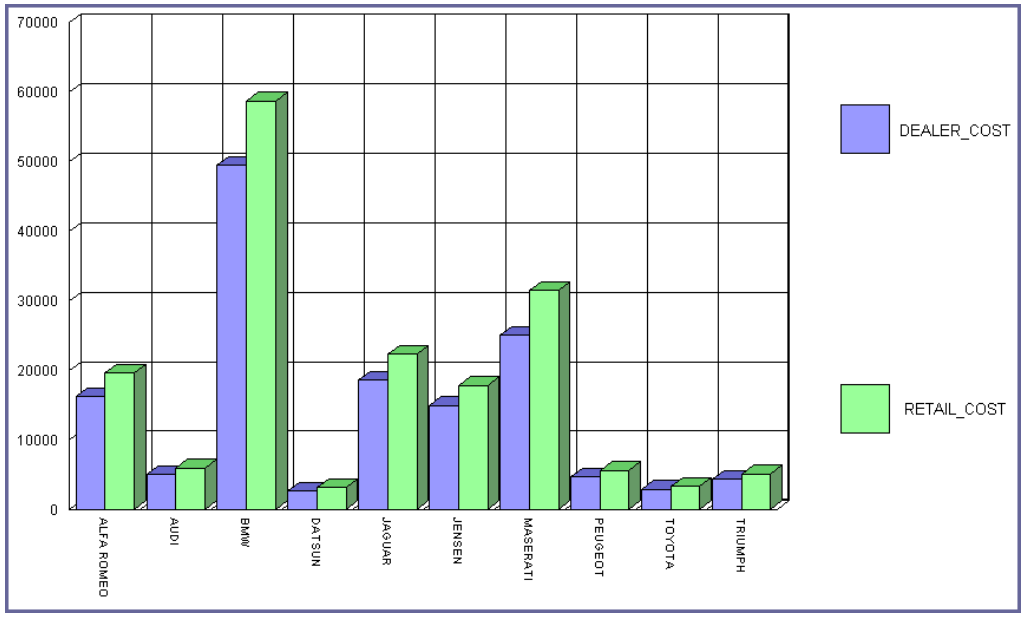
In the first graph, the font size for the axis labels and the legend is proportionate to the size of the graph. All the text on the graph is easy to read regardless of the way font size is specified in the procedure—with absolute coordinates or with virtual coordinates:



Next we modify the procedure to increase the size of the graph output area. The font size for the axis labels—specified with absolute coordinates— remains the same, and the text is now proportionately too small and harder to read than before. An absolute size, whether it is the size of a font or another graph element, always renders exactly the same whether the graph is large or small.

The font size for the legend—specified with virtual coordinates—increases proportionately with the size of the graph and the text is still easy to read.

In this example, the size of the vertical bars (risers) is also controlled with virtual coordinates. Like the size of the legend text, they increase proportionately when the graph output area is increased.



How Does WebFOCUS Graphics Use the Virtual Coordinate System?

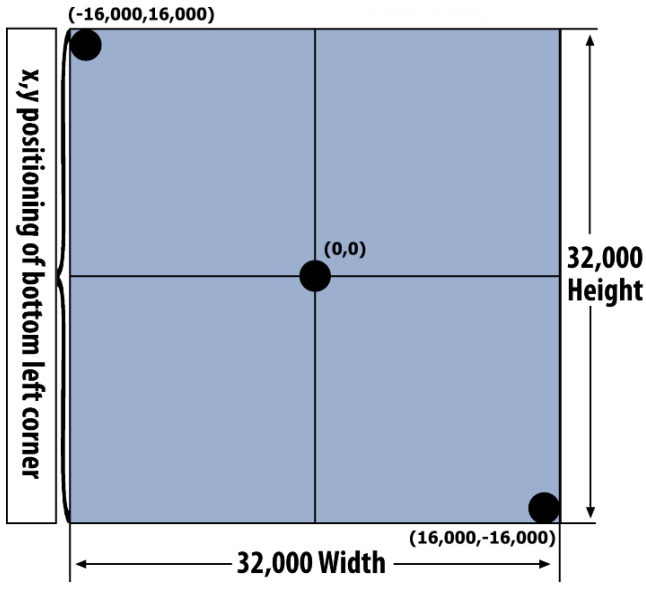
WebFOCUS Graphics uses the Virtual Coordinate System to position and size the elements of a graph. You can control several rectangular elements in WebFOCUS, but you typically create graphs using the following:

- **Applet Rectangle**—Defines the graph output area, which is the entire area allowed for the presentation of a graph. The Applet Rectangle sets the size and shape of the virtual coordinate grid used for plotting a WebFOCUS graph.
- **Frame Rectangle**—Is the area within which the graph coordinates are plotted.
- **Legend Rectangle**—Explains how to interpret the data plotted on a graph.

To plot a point in the Cartesian Coordinate System, you must provide at least two coordinates (X,Y). In WebFOCUS Graphics, four coordinates are required to plot a rectangle such as the Frame Rectangle or Legend Rectangle—X, Y, Width, and Height. The first two coordinates (X,Y) control the point location of the bottom left corner of the rectangle, while the last two coordinates control the width and height of the rectangle.

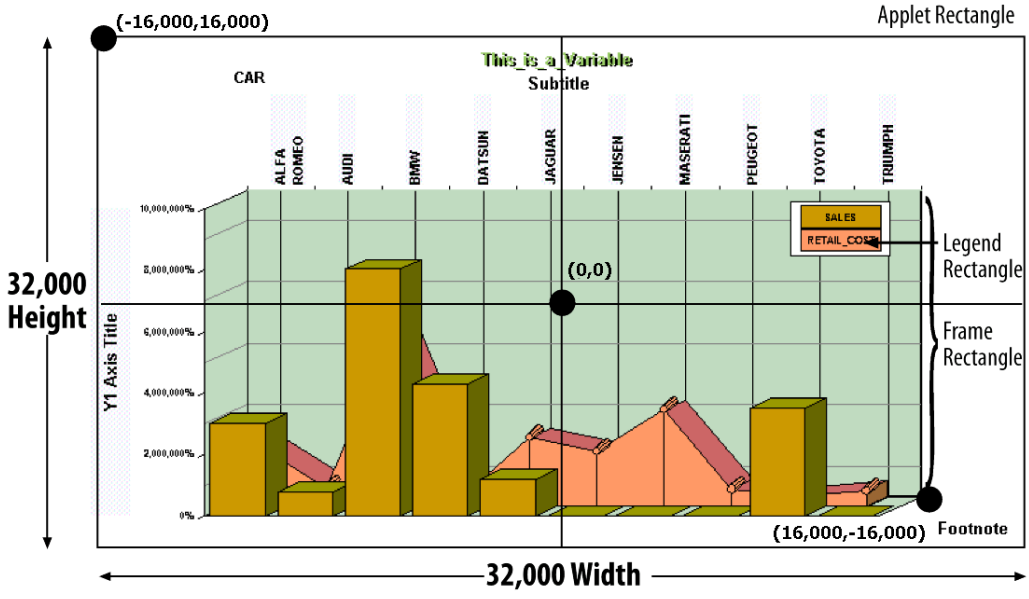
Two absolute values set the size and shape of the Applet Rectangle.

The following is a Cartesian grid showing the total number of X-axis and Y-axis coordinate points used to plot a WebFOCUS graph. It is represented as a square, with points plotted in the Cartesian Coordinate System. Coordinate point (0,0) is the center of the grid.



If we superimpose this grid over a WebFOCUS graph (next diagram), its shape changes from a square to a rectangle (the Applet Rectangle), a shape typically used in the presentation of a graph. However, the number of points on both the X-axis and Y-axis remains 32,000. The fact that the number of points is constant regardless of the size or shape of the grid is the reason why the coordinate system used by WebFOCUS Graphics is called the Virtual Coordinate System.

The values passed on a WebFOCUS Graphics API call to position and size graph elements do not apply to pixels; rather, they are conceptual points on a conceptual grid.



The examples that follow always show the position of coordinate point (0,0) to mark the center of the grid used in the Virtual Coordinate System. It will help you see the effect of the changes made to the sample graphs. The position of coordinate point (0,0) on the grid is constant, and graph elements such as rectangles move relative to it through the arguments passed on a WebFOCUS API call.

Example: Plotting a Frame Rectangle in the Default Applet Rectangle

In these examples, WebFOCUS Graphics uses the default values for the Applet Rectangle. You plot an Applet Rectangle with the WebFOCUS HAXIS setting (width of graph output area) and VAXIS setting (height of graph output area) in a procedure. In general, the optimal display format for an Applet Rectangle is 1.618 units in width for every 1 unit in height.

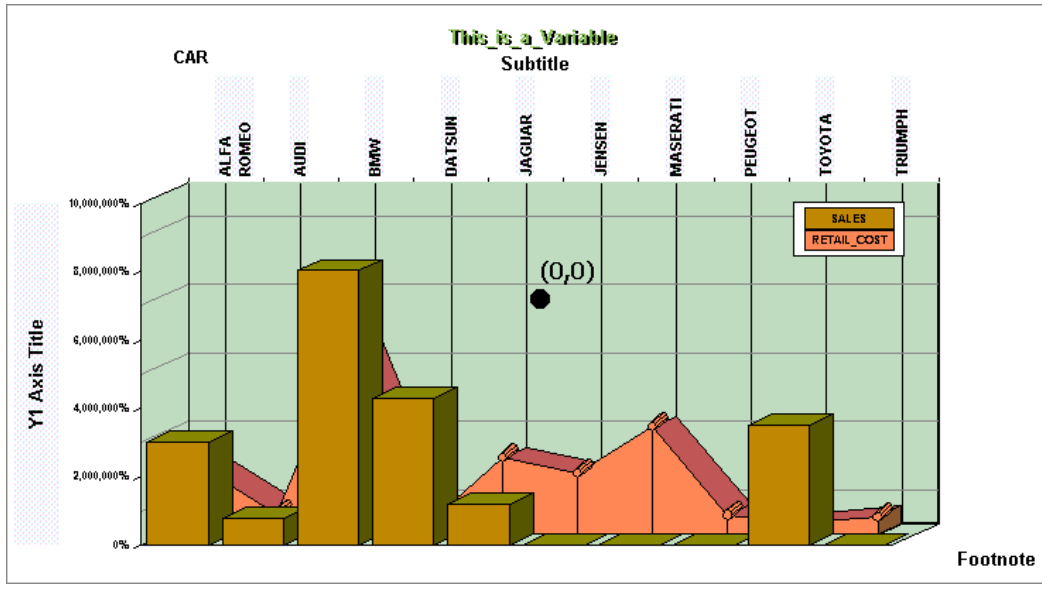
This aspect ratio is essentially a golden rectangle, a form used since ancient Greece in art and architecture. It is naturally pleasing to the human eye.

The WebFOCUS Graphics default values are:

```
SET HAXIS=770
SET VAXIS=400
```

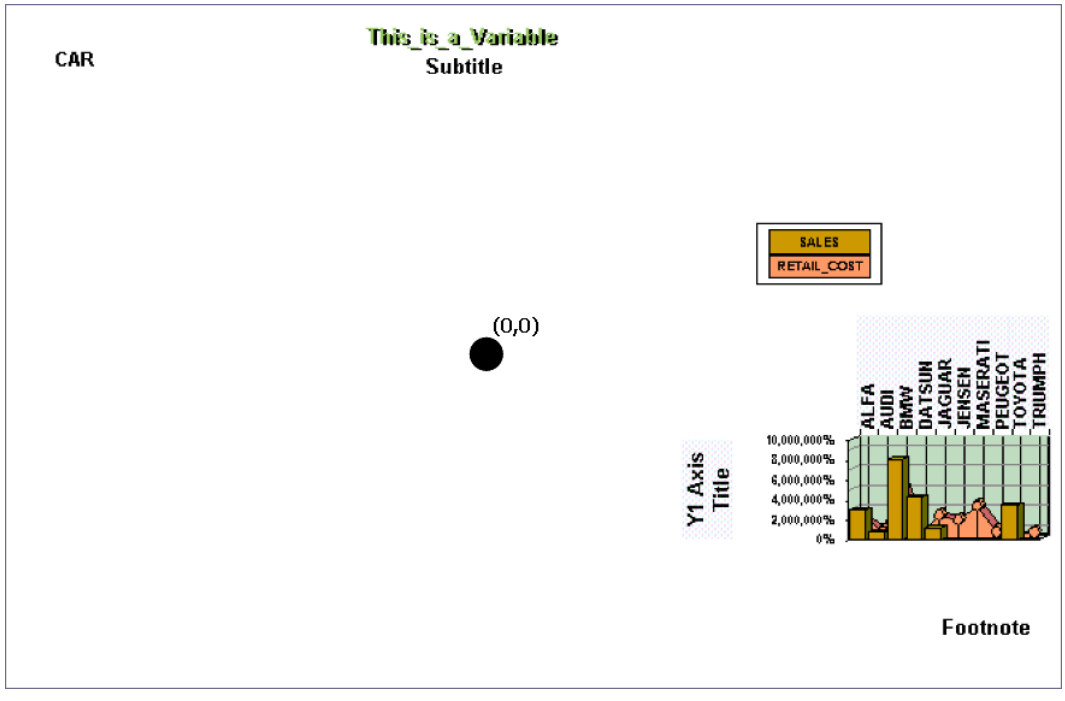
In the first example, the Frame Rectangle is plotted with the following WebFOCUS Graphics API code:

```
setRect(getFrame(),new Rectangle(-10753,-12619,22378,19359));
```



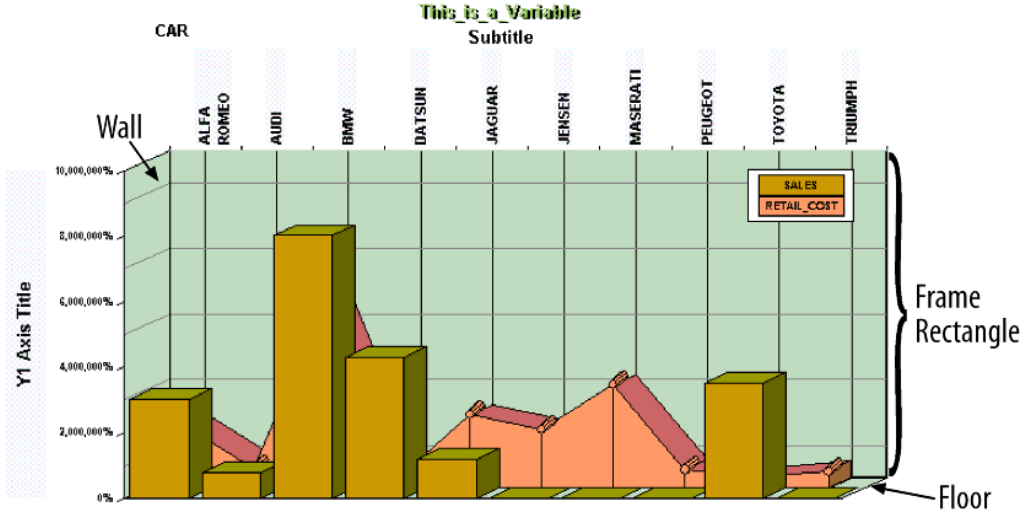
In the next example, the API code repositions the bottom left corner of the Frame Rectangle within the Applet Rectangle and decreases its size. The position of coordinate point (0,0) remains constant, and the Frame Rectangle moves relative to it. The API code is:

```
setRect(getFrame(),new Rectangle(10000,-10000,5000,5000);
```

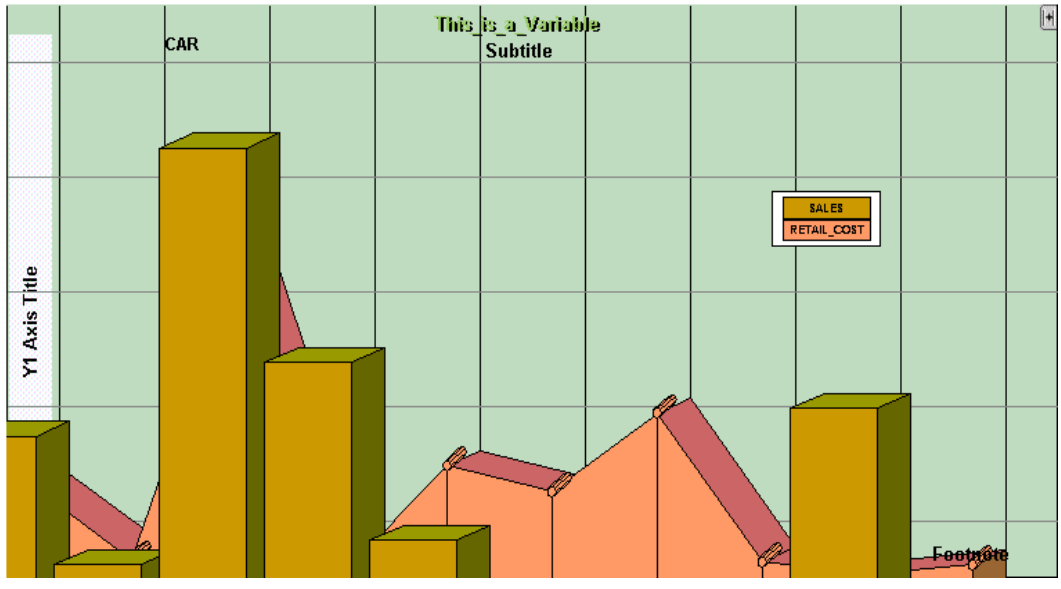


Example: Plotting a Graph With a Three-dimensional Effect

The Frame Rectangle does not include the wall or floor of a graph rendered with a three-dimensional effect for depth, as shown in the following diagram. This is important to keep in mind when you position and size the Frame Rectangle.



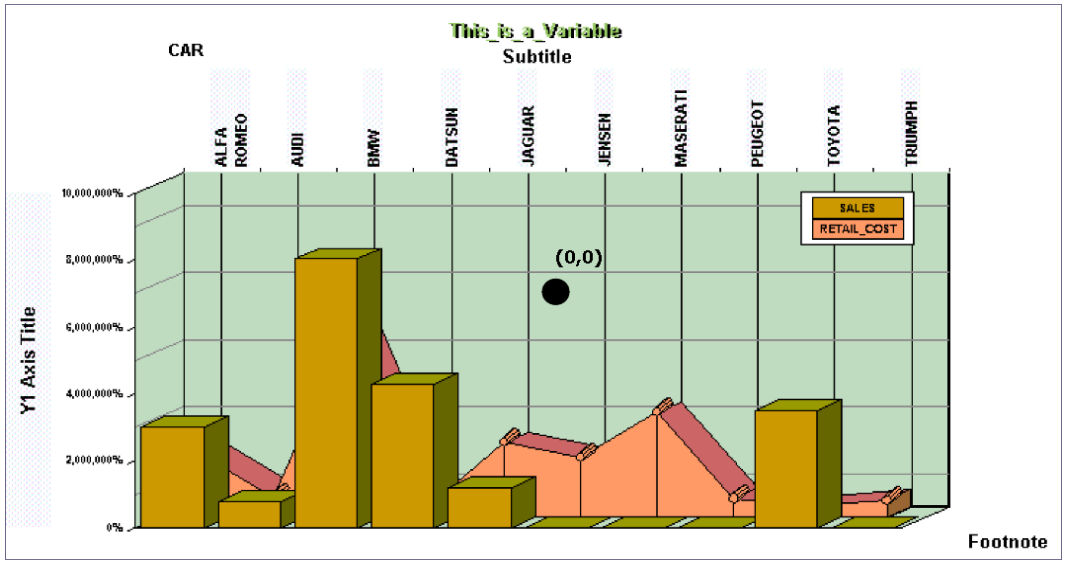
For example, you cannot set the coordinates to the maximum number allowed, in an attempt to make the Frame Rectangle fill the entire Applet Rectangle. To do that results in the loss of data, as illustrated in the following unintentional presentation:



Example: Plotting a Legend Rectangle

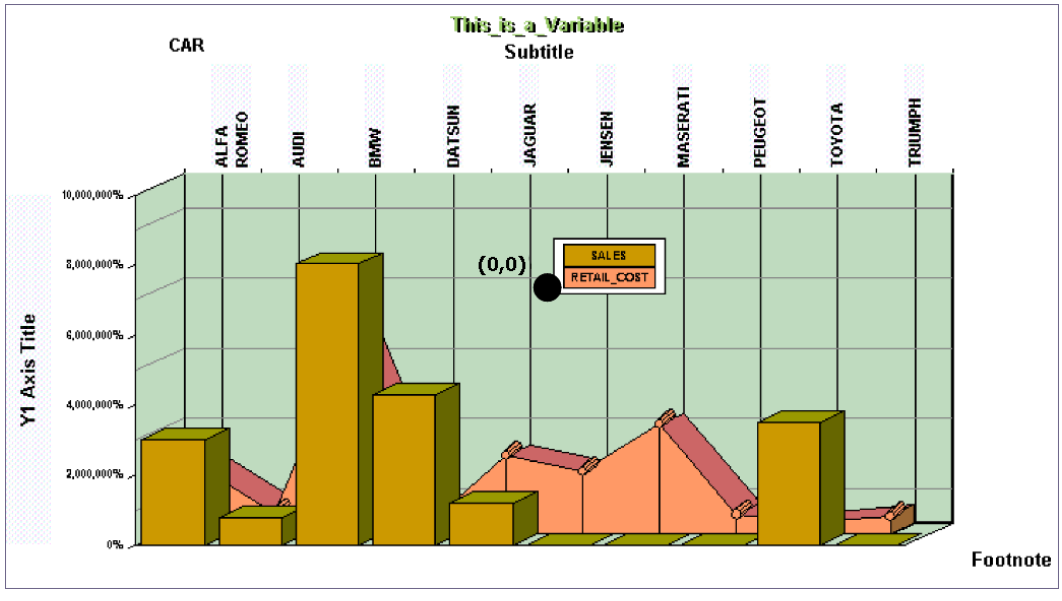
The virtual coordinates for a Legend Rectangle work just like those for a Frame Rectangle. In the first example, the Legend Rectangle is plotted with the following WebFOCUS Graphics API code:

```
setRect(getLegendArea(),new Rectangle(7300,2488,3300,3100)):
```



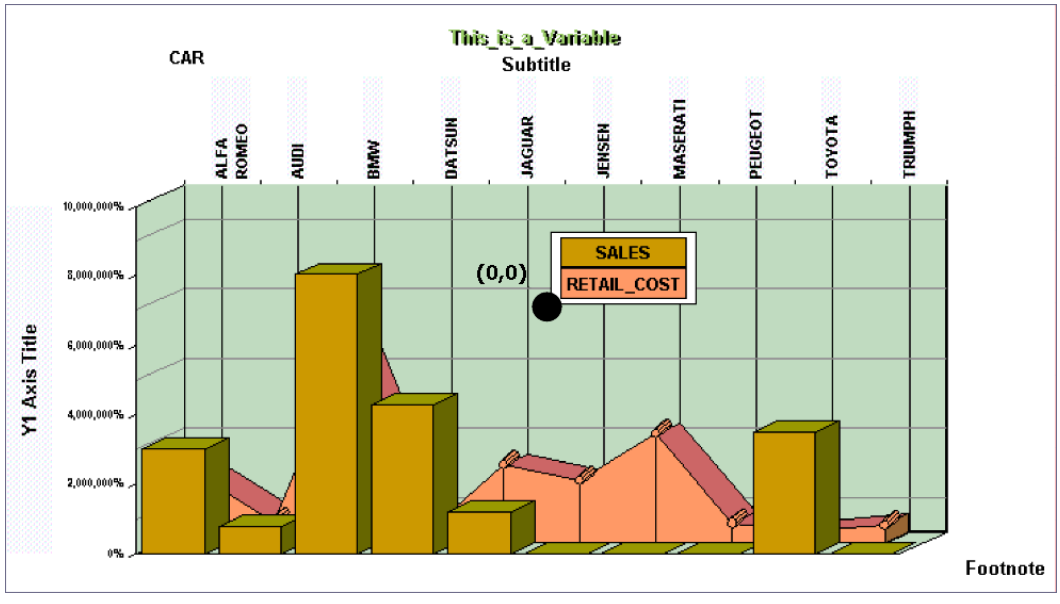
You can change the first two coordinates to reposition the legend toward the center of the graph:

```
setRect(getLegendArea(),new Rectangle(0,0,3300,3100)):
```



Or you can change the last two coordinates to enlarge the legend:

```
setRect(getLegendArea(),new Rectangle(0,0,4300,4100)):
```



Implementing API Calls

How to:

Implement an API Call

Example:

Customizing a Graph Using API Calls

You can enhance graph output by adding a variety of API calls within the ON GRAPH SET GRAPHSTYLE * and ENDSTYLE commands in a WebFOCUS procedure.

Syntax: How to Implement an API Call

```
GRAPH FILE filename
graph commands
      .
      .
      .
ON GRAPH SET GRAPHSTYLE *
API call
      .
      .
      .
ENDSTYLE
[ON GRAPH SET STYLE *
WebFOCUS StyleSheet command
ENDSTYLE]
END
```

where:

filename

Specifies a data source.

graph commands

Are commands allowed in a procedure. For a description of valid commands, with syntax and examples, see the *Creating a Graph* chapter in the *Creating Reports With WebFOCUS Language* manual.

API call

Is a property setting, method call, or multiple property settings or method calls. For a description of property settings and method calls, with syntax and examples, see the *Properties*, the *Methods* chapter, and the *Methods that Return an Object ID* in your WebFOCUS Graphics documentation.

WebFOCUS StyleSheet command

Is an optional WebFOCUS StyleSheet command or multiple StyleSheet commands. For a description of StyleSheet commands, with syntax and examples, see the *Formatting Reports: An Overview* chapter through the *Formatting Report Data* chapter in the *Creating Reports With WebFOCUS Language* manual.

Example: Customizing a Graph Using API Calls

The following annotated example illustrates how to customize a graph using four API calls. The API calls are highlighted in the request.

The calls illustrate the API syntax rules. They:

- Are case sensitive.
- End with a semicolon (;).
- Comply with explicitly defined spacing conventions.

The procedure is

```
   GRAPH FILE SALES
   SUM RETURNS
   RETAIL_PRICE
   ACROSS PROD_CODE AS 'Product Code'
   ON GRAPH SET GRAPHSTYLE *
1. setLegendMarkerPosition(4);
2. setO1LabelRotate(0);
3. setTitleString("Sales Report");
4. setTextJustHoriz(getTitle(),1);
   ENDSTYLE
   END
```

where:

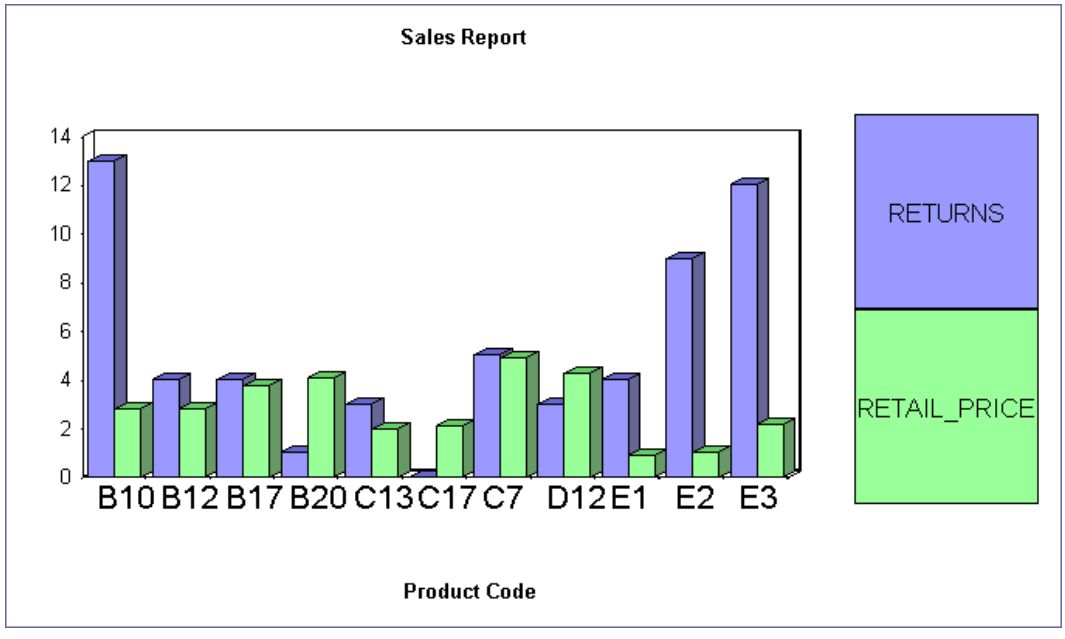
1. Displays legend text inside the legend marker.

2. Displays the X-axis labels horizontally.

3. Displays the title Sales Report.

4. Centers the title.

The output is:



CHAPTER 8

WebFOCUS Maintain Enhancements

Topics:

- WebFOCUS Maintain Application Debugger
- Maintain Form Enhancements

This chapter describes all of the features for WebFOCUS Maintain in Version 5 Release 3.

WebFOCUS Maintain Application Debugger

In this section:

Debugger Screen

Debugging Your Application

Tracking Variables

Navigation Control

How to:

Invoke the WebFOCUS Maintain Application Debugger

Select a File and Find a Case

Example:

Loading the Application Into the Debugger

Reference:

Alternate Methods of Invoking the Maintain Application Debugger

Error Messages and Type Statements

Usage Notes: Debugger Limitations

The WebFOCUS Maintain Application Debugger allows you to step through your Maintain application while running on the Web to assist in identifying and correcting problems encountered at runtime. It is a useful debugging tool that can be easily enabled during the development cycle or when troubleshooting a problem in a production environment.

A Help feature is available through the debugging tool to provide specific instruction on its use.

Syntax: How to Invoke the WebFOCUS Maintain Application Debugger

The following command can be used to run your WebFOCUS Maintain application using the Maintain Application Debugger:

```
MNTCON APPDEBUG EX procedure
```

where:

procedure

is a Maintain procedure with an MNT or MAINTAIN extension

This command is available from the default WebFOCUS Maintain launch form, WFMSTART.HTML by choosing the option *Execute a procedure with Maintain Application Debugger* from the drop down list for Invocation Type.

You can also add this command to your own launch form or embed it in a URL call.

This is the most flexible way to launch the debugger, as it will immediately launch the application using the debugger without requiring a separate compile step, and without leaving a compiled module (FCM or FOCCOMP) behind.

Reference: Alternate Methods of Invoking the Maintain Application Debugger

Other methods used to invoke the Maintain Application Debugger:

- Add the following line to the server's edasprof.prf profile file

  ```
  MNTCON APPDEBUG
  ```

  and run the application with the syntax

  ```
  MNTCON EX procedure
  ```

- Compile your procedure(s) using the command

  ```
  MNTCON APPDEBUG COMPILE procedure
  ```

  and run the compiled object with the command

  ```
  MNTCON APPDEBUG RUN procedurename
  ```

Debugger Screen

The Maintain Application Debugger screen consists of the following components:

<table>
<tr><th>Top Left</th><th>Top Right</th><th>Left, Under View Data</th><th>Right, Under Command Buttons</th></tr>
<tr><td>Select File: Name of the Maintain procedure and associated Winform (Combo Box)</td><td rowspan="3">Command buttons for the following actions:
Set Break Point
Run
Step Into
Step Over
Help
Exit</td><td rowspan="3">Variables Frame (VF): Displays details about Global Variables and stacks.</td><td rowspan="3">File Frame (FF): Shows the Maintain procedure code and the current position as the application is run.</td></tr>
<tr><td>Select Case: All of the Cases in the current Maintain Procedure (Combo Box)</td></tr>
<tr><td>View Data: Global Variables or individual stack names; controls what you see in the Variables Frame (Combo Box)</td></tr>
</table>

Debugging Your Application

The following example shows how to use the debugger.

Example: Loading the Application Into the Debugger

1. Start the debugger using one of the methods described in the syntax section: *How to Invoke the WebFOCUS Maintain Application Debugger* on page 8-2.

   The main file appears in the File Frame. The color green indicates that a line is commented. A blue line is the current line where the debugger is paused; this line is not yet executed.

2. To run the application up to the end or to the nearest break point, click *Run*.
3. You can run your application either line by line or by setting and using break points.

   a. To execute a line:

   - Execute the current line and click *Step Over* to advance to the next line.
   - Execute the current line and stop inside another case (if the current line contains a call to another case). Next, click *Step Over*.

   b. To set break points:

   - Click the line where you want to set the break point. When first clicked, the line is highlighted in a gray frame.
   - Click *Set Break Point* or press *F9*. The line changes to red.
   - To deselect a break point, select the line again and, once more, click *Set Break Poin*t or press *F9*.

     Note: If you try to set a break point to a commented line or to an empty line, you will see the message "Cannot set break point."

4. To terminate the debugger, click *Exit* which accesses the launch form.

Tracking Variables

Global variables and Stacks. When you change the Category in the View Data ComboBox, the corresponding variable group appears in the Variables Frame. If the variable is not set, its value displays as #empty. When viewing a stack, you can see FocCount and FocIndex and the current stack position. To change the stack position use the first, next, prev and last navigation links.

Changing variable values. Currently it is possible to change values only for Global Variables. To change the value, click the variable value in the Variable Frame, enter a new value, and click *Enter* or just remove focus from the current control. The new value turns red.

Note: First the variable is set, then the current line is executed. At this point, the variable is changed on the screen only. It is not yet set inside the application (or Maintain server). It is set only when the debugger "goes" to the server, that is, when you click *Step Over* or when you change the current file by using the Select File: ComboBox.

If the value entered cannot be set (is not valid) the alert message "Cannot set value" displays and the variable value is shown as 0.

Navigation Control

The Select File ComboBox lists the name of the Maintain procedure that is currently running, and the associated Winform and import modules, if any. The Select Case: ComboBox contains a list of all cases of the current file.

Procedure: How to Select a File and Find a Case

1. To change the current file, select another file from this ComboBox. The debugger will go to the Maintain server and load the selected file into the File Frame.

   At this time, running the Winform file itself with the debugging functions (setting break points, and so on) is not supported.

   External procedures and remote Call procedures are not listed here. They run as part of the main application and data is returned to the calling procedure and available to the debugger. However, the debugging functions are not available for the remote procedures themselves.

2. To go to a Case, select a name from Select Case: ComboBox. The File Frame scrolls to the selected case and the beginning of the case is highlighted in blue-green.

Reference: Error Messages and Type Statements

If a non-critical run time error occurs, an alert message pops up when the next debugger screen displays.

Type statements are seen only at the end of the application execution in the case of non-Winform applications, or after the Winform Show command in the case of applications with winforms.

Reference: Usage Notes: Debugger Limitations

- Procedure lines greater than 70 characters are truncated in the File Frame view.
- Winform files cannot be run with debugging options. The code can be viewed in the File Frame.
- Remote Calls and external procedures are not listed in the Select Files ComboBox and cannot be run with debugging functions. They run as usual when encountered in the application code, and the variables and errors returned are available to the main calling procedure in the debugger.

Maintain Form Enhancements

The following are Maintain Form enhancements:

- Click Event is available for the ListBox and ComboBox controls.
- The Scroll value for the Overflow property of an HTML Table automatically provides a horizontal scroll bar when the control is sized less than the width of the data. Data values will wrap when they are wider than the column setting using any Overflow setting.
- Developers have the option of using a pointer to their JavaScript and vbscript files in their runtime forms, rather than being required to embed the script code in the HTML of the generated forms themselves. The link information for the forms is resolved during deployment.

CHAPTER 9

WebFOCUS Web Services

Topics:

- What Is a Web Service?
- Components of a Web Service
- Using WebFOCUS Web Services
- Example: Using a Web Service to Make an Online Reservation
- WebFOCUS Web Services Architecture

With WebFOCUS Version 5 Release 3, you can interact with a variety of WebFOCUS features using Web Services.

What Is a Web Service?

A Web Service is a self-contained application that performs certain functions that you can publish on the Web based on open standards. A Web Service facilitates communication between applications because it is not platform-specific or language-based.

A Web Service functions like a black box, because you can provide input and expect certain output without knowing exactly how the results are achieved. Since Web Services are platform-neutral and comply with open standards, more businesses can interact with one another through integration of applications, even those written in different languages. For example, Windows applications can talk to UNIX applications, and Java can talk to Perl.

Most companies develop software for their specific business functions. However, due to increased associations among businesses, and international commercial collaboration, companies need a way to share information stored in separate computer systems. A Web Service makes it possible for applications within computer systems to communicate with each other.

Through a Web Service, business logic, processes, and data can be reused by different applications. This significantly reduces the amount of time it takes to develop applications by eliminating the need to replicate business functions.

Components of a Web Service

The main components of a Web Service are:

- Extensible Markup Language (XML). XML is a flexible text format that allows the exchange of data on the Internet, intranets, and elsewhere. It is a standard of the World Wide Web Consortium (W3C).
- Simple Object Access Protocol (SOAP). SOAP is a communications protocol designed for exchanging information in a distributed environment. It provides a messaging framework that is independent of implementation specifics, and it enables a program on one kind of operating system (such as Windows 2000) to communicate with a program on another kind of operating system (such as Linux). SOAP uses the Hypertext Transfer Protocol (HTTP) and XML to exchange information.
- Web Services Description Language (WSDL). WSDL, expressed in XML, describes how to access a Web Service and the operations that it will perform. WSDL, which was co-developed by Microsoft and IBM, describes the protocols and formats used by the Web Service.
- Universal Description, Discovery, and Integration (UDDI). UDDI is the component that enables businesses to find each other on the Web and make their systems interoperable for e-commerce. A business can list itself by name, product, location, or by the Web Service it offers. Information is entered on a registry server and then shared by servers in other businesses. Services are defined through a UDDI document called a Type Model or tModel. The tModel often contains a WSDL file that describes a SOAP interface to an XML Web Service.

You can use XML, SOAP, WSDL, and UDDI together to integrate Web-based applications. Use XML to tag the data, SOAP to transfer the data, WSDL to describe the available services, and UDDI to list the available services.

Using WebFOCUS Web Services

In this section:

What Can You Do Through a WebFOCUS Web Service?

The WebFOCUS WSDL Creation Utility

The WebFOCUS Web Services Adapter

WebFOCUS Web Services allow you to develop applications in the .NET or Java environments and perform WebFOCUS functionality from it. A business can pass parameters from its own application to WebFOCUS and retrieve output in the form of a formatted report or data. In WebFOCUS reports, input is in the form of parameters and output is in the form of a formatted report.

Businesses benefit from Web Services because of their accessibility and efficiency. A WebFOCUS Web Service allows businesses to use their own customized front-end interfaces to implement a variety of WebFOCUS reporting capabilities.

WebFOCUS provides the following Web Services products:

- WebFOCUS Web Services Enablement, also known as the Publish option, can present WebFOCUS reports as Web Services operations. It allows external applications built with Web Services supported languages (such as C++, C#, VB.NET, Java, and Flash Action Script) to integrate the report output. It also includes a set of generic Web Services operations that allow an application to integrate some basic WebFOCUS functionality.
- WebFOCUS Web Services Adapter, also known as the Consume option, consumes Web Services information and incorporates it as a data source. A Web Service that is created and deployed with any Web Services authoring tool can be accessed directly by the WebFOCUS Reporting Server and manipulated as though it were relational data.

What Can You Do Through a WebFOCUS Web Service?

You can do the following through a WebFOCUS Web Service:

- Explore the file structure of servers and applications.
- Run WebFOCUS reports.
- Determine the parameters for a report.
- Query a server for information and incorporate the results in an application. For example, you can populate a list box in your application with the results to expose choices to the user.
- Implement Managed Reporting security, which is beneficial if your business has different internal security standards from WebFOCUS. You can updated Managed Reporting security from your own application.

The WebFOCUS WSDL Creation Utility

WebFOCUS provides a WSDL creation utility, which describes the capabilities available through a WebFOCUS Web Service. A WSDL file is an XML document that defines the input parameters for WebFOCUS Web Service functions, the expected output, and the method for calling each function. The WebFOCUS WSDL utility creates a file needed to call one or more WebFOCUS Web Services.

.NET or Java programmers can use this to develop their own applications.

The WebFOCUS Web Services Adapter

WebFOCUS accesses a business' data sources with data adapters for Relational Database Management Systems such as DB2, SQL Server, Oracle, Teradata, and so on. However, some businesses can only access certain data using a homegrown Web Service, or can only access external data using a Web Service. In these cases, WebFOCUS can use its Web Services adapter to call Web Services. The WebFOCUS Web Services adapter allows you to pass parameters from WebFOCUS to a Web Service and access data from the applications defined by the Web Service.

The WebFOCUS Web Services adapter allows ad hoc reporting against data from Web Service applications. You can join Web Services to other Web Services and other data sources. For more information about joining data sources, see *Creating Reports With WebFOCUS Language*.

This adapter can read a Web Service as a source during the creation of a Data Warehouse or DataMart using DataMigrator.

Example: Using a Web Service to Make an Online Reservation

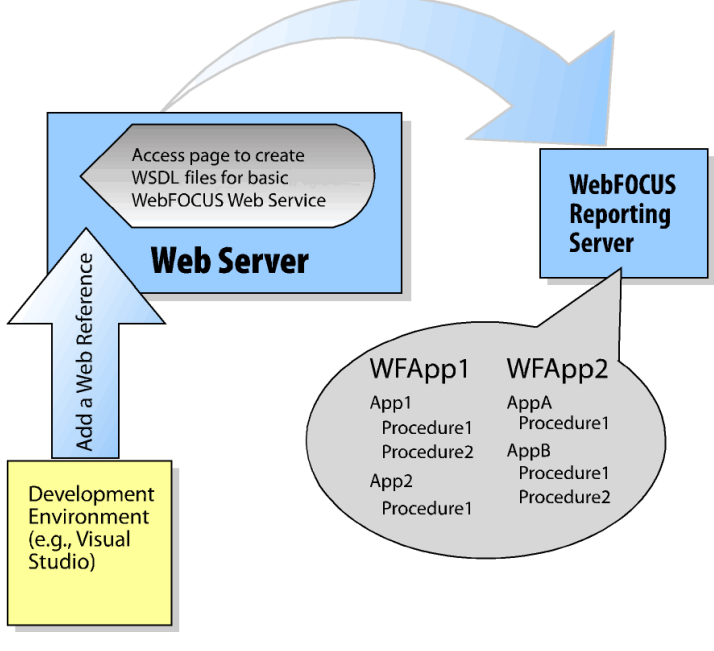
Suppose you decide to purchase an airline ticket online through a travel Web site. You search the Web site's database for an available flight. Once you select an itinerary, the Web application communicates with the airline's database to book the flight and secure a confirmation. If you receive a message that the flight is no longer available, it is usually because of the difference between the travel Web site's database and the real-time availability of flights in the airline's database.

If the airline reservation system used a Web Service as a method of communication, the travel Web site could simply send input (such as your name, the date, time of flights, and so on) to the Web Service. The Web Service would then pass the airline's output (flight confirmation, price, and ticket number) back to the travel Web site.

WebFOCUS Web Services Architecture

In this example the developer creates a Web reference from the development environment (for example, Microsoft® Visual Studio®) to the WSDL (Web Services Description Language) file for the basic WebFOCUS Web Service.

This Web Service allows the user to explore the WebFOCUS Reporting Server. For instance, the user can access a list of the applications and procedures residing on the server. The developer can also run one of the existing procedures or send an ad hoc procedure to the server for execution.



CHAPTER 10

Security Enhancements

Topics:

- Managed Reporting Realm Driver
- WebFOCUS Data Security Using the Middle Tier DBA Password
- Developer Studio Security Enhancements
- ReportCaster Integration With SiteMinder
- Optional Encryption Providers for ReportCaster
- Enhanced Single Signon Support for Open Portal Services
- Configuring the Trusted MR Sign-On Setting for ReportCaster

This chapter describes new security features for Version 5 Release 3.

Managed Reporting Realm Driver

The Managed Reporting Realm Driver gives you flexibility in deciding how you will authenticate and authorize Managed Reporting users. The Realm Driver can both authenticate and authorize users to LDAP, Active Directory, relational databases, or a WebFOCUS Reporting Server. You can also write your own manager class to perform specialized authentication.

The Realm Driver is only available for the Servlet implementation of the WebFOCUS Client.

WebFOCUS Data Security Using the Middle Tier DBA Password

How to:

Set the Middle Tier DBA Password

The SET PERMPASS=*password* command establishes a password that the user cannot change for access to data sources. You can control whether a PERMPASS is sent to the WebFOCUS Reporting Server with each request by choosing an option for the IBIF_dbapass_src variable.

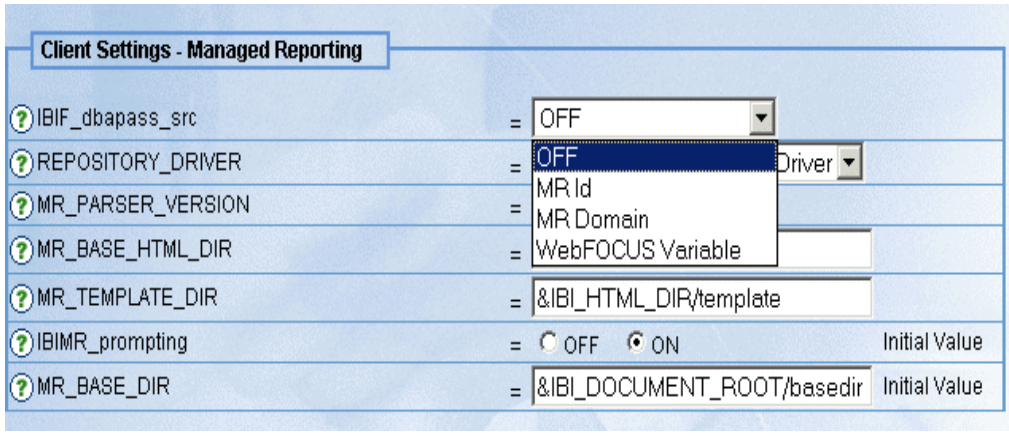
The DBA password defines access to data sources on the WebFOCUS Reporting Server. Each data source description can specify which passwords are acceptable for accessing the data source. Each password may also be associated with specific access types, conditions and rules that limit access down to the row level if necessary. Database security is described in the *Describing Data With WebFOCUS Language* manual.

By setting the DBA password for each request, you establish a single signon from Managed Reporting in the front end to the data source on the WebFOCUS Reporting Server.

ReportCaster also supports the DBA password, which is sent in encrypted form to ReportCaster. The DBA password cannot be assigned a group ID because a single password can be associated with multiple groups. It can be set to the domain ID, the user's HREF, or to a user-specified variable.

Procedure: How to Set the Middle Tier DBA Password

1. Click *Configuration* and then *Client Settings*.
2. Select the *Managed Reporting* category and then the *IBI_dbapass_src* variable.



3. Select one of the following options:

   - **OFF.** This option sets IBIF_dbapass_src to blank and does not pass a DBA password with each request.
   - **MR Id.** This option sets IBIF_dbapass_src to the value of the CURRENT_USER_FILE variable. CURRENT_USER_FILE is the WFS variable that holds the current user's href. The href is normally in the form *filename.ext* (for example, sally02.htm), where the file name may be a maximum of eight characters. The file name portion of the href without the extension will be sent to the WebFOCUS Reporting Server as the DBA password (SET PERMPASS=*dbapass*) prefixed to each request.

     Note: If a Managed Reporting Repository Driver populates user hrefs from an outside source with file names greater than eight characters, the SET PERMASS=*dbapass* syntax fails, the server returns an error, and WebFOCUS may function unpredictably.

- **MR Domain.** This option sets IBIF_dbapass_src to the value of the IBIMR_domain variable. IBIMR_domain is the WFS variable that holds the domain href of the current action. The domain href is normally in the form of an eight character domain directory name, a slash, and an eight character domain file name followed by an extension (for example, domainon/domainon.htm or untitled/untitled.htm). Only the file name portion of the href (without preceding directory name or the extension) is sent to the WebFOCUS Reporting Server as the DBA password. A domain href of untitled/untitled.htm produces a DBA password of untitled.
- **WebFOCUS Variable.** If you choose this option, an edit box opens so that you can enter the name of a user-specified variable available to the CGI/Servlet WFS script processor. This value is retrieved and sent to the WebFOCUS Reporting Server as the DBA password. If the value is greater than eight characters, WebFOCUS may function unpredictably.

For more information about the SET PERMPASS command, see *Non-Overridable User Passwords (SET PERMPASS)* in Chapter 1, *WebFOCUS Reporting Language Enhancements*.

Developer Studio Security Enhancements

In this section:

Custom Logon Template Support

Enhanced Support for Netegrity SiteMinder

Support for RSA ClearTrust

The following are Developer Studio security enhancements for Version 5 Release 3.

Custom Logon Template Support

If you are protecting WebFOCUS with custom security, you may be able to access it from Developer Studio by using a custom logon template. Logon templates are developed by an administrator and describe certain behavior specific to the custom security solution. The template uses XML tags to describe the path to the logon resource (for example, a servlet, JSP, ASP, or CGI), the protocol to use (for example, HTTP or HTTPS). The security system must return a cookie, named in an XML tag, upon successful signon. Developer Studio will then continuously forward this cookie to the site protecting WebFOCUS for the duration of its session. These templates are distributed to each developer or referenced from a shared location on the network. Developers may then select a custom logon template from the environment properties dialog and use it to access the protected WebFOCUS environment.

Enhanced Support for Netegrity SiteMinder

The Netegrity SiteMinder logon option has been redesigned to use a new XML-based logon template architecture. This approach allows a site to customize its SiteMinder logon behavior. For example, your logon resource can now be located on a machine different from the machine hosting WebFOCUS if you add the SMAGENTNAME variable and assign it the appropriate value.

Support for RSA ClearTrust

Developer Studio includes an option for RSA ClearTrust logon. This option is implemented with a new XML-based logon template architecture that allows the site to customize the logon behavior.

ReportCaster Integration With SiteMinder

ReportCaster integration with Netegrity® SiteMinder® is supported when you specify settings in the siteminder.txt file, which resides in the ReportCaster Distribution Server's cfg directory.

For more information about integrating ReportCaster with Netegrity SiteMinder, contact Customer Support Services.

Optional Encryption Providers for ReportCaster

In this section:

Sun JCE Provider Support

How to:

Enable DES or Triple DES Encryption

Managed Reporting Trusted Signon

Reference:

Key File Format

ReportCaster supports encryption providers based on the Data Encryption Standard (DES) and Triple DES algorithms. These providers are activated by the Encryption Type parameter in the ReportCaster Server Configuration tool. This parameter specifies an override of the encryption class used to read WebFOCUS cookies and protect the ReportCaster cookie. It is also used with the trusted Managed Reporting sign-on feature.

These optional providers use Sun's Java Cryptography Extension (JCE) library and are supported with the Java servlet (WFServlet) implementation of the WebFOCUS Client. The Triple DES provider uses the stronger Cypher Block Chaining (CBC) mode option. You can specify an external encryption key for both provider types.

If you enable WebFOCUS encryption using the WebFOCUS WFENCR context parameter, then you must identically set ReportCaster encryption, including any key file settings.

For more information about WebFOCUS encryption using the WebFOCUS WFENCR context parameter, see *Technical Memo 4564: Optional Encryption Providers for WebFOCUS*.

Procedure: How to Enable DES or Triple DES Encryption

1. Access the ReportCaster Server Configuration tool in one of the following ways:

   - If you are on a Windows platform, you can access the configuration tool from the Start Programs menu by selecting *Information Builders*, *ReportCaster 53*, *Distribution Server*, *Configuration*, and then clicking *Edit*.
   - From Managed Reporting, click the clock icon. Java Web Start is launched and the ReportCaster Development and Administration Interface opens.
   - You can also access ReportCaster independent of Managed Reporting by typing the following URL:

     `http://hostname/rcaster/main/reportcaster.jsp`

     where:

     hostname is the host name of the ReportCaster Distribution Server.

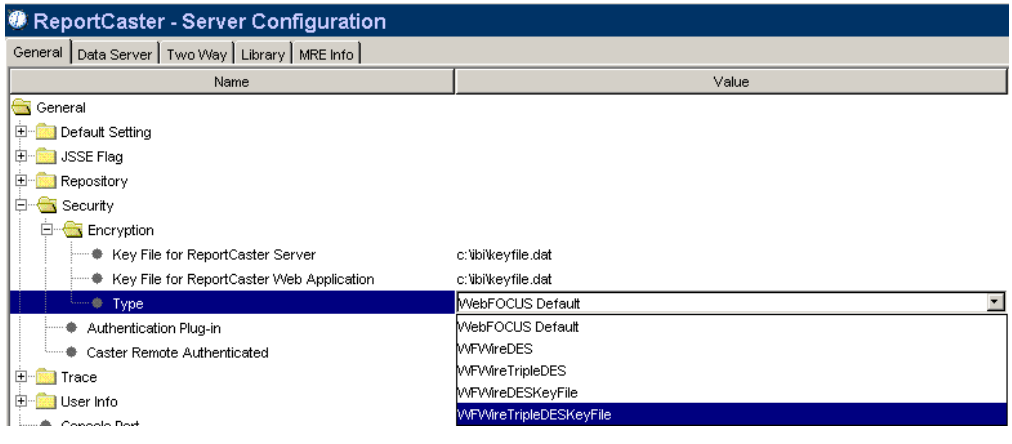
     In this case, since your user credentials have not been validated by Managed Reporting, you must enter a valid ReportCaster user ID and password to log on to ReportCaster.

2. Select the *ReportCaster Server Configuration* link.

   Note: This step is not necessary if you accessed the configuration tool directly from the Start Programs menu.

   The ReportCaster Server Configuration tool opens displaying the General tab.

3. Expand the Security folder and then expand the Encryption folder:



4. Using the drop-down list, select one of the following options for the Type parameter:
   - WebFOCUS Default - Enables WebFOCUS default encryption.
   - WFWireDES - Enables DES encryption without an external key file.
   - WFWireTripleDES - Enables Triple DES encryption without an external key file.
   - WFWireDESKeyFile - Enables DES encryption with an external key file.
   - WFWireTripleDESKeyFile - Enables Triple DES encryption with an external key file.
5. If you select WFWireDESKeyFile or WFWireTripleDESKeyFile as the Encryption Type, specify the fully qualified path of the key file (for example, c:\ibi\keyfile.dat) in the following two parameters:
   - Key File for ReportCaster Web Application - Informs the ReportCaster servlets where the key file resides on the Application Server. This enables ReportCaster to encrypt and decrypt cookies.
   - Key File for ReportCaster Server - Used by the ReportCaster Server when connecting to the Web server to retrieve information from Managed Reporting.

     Important: If WebFOCUS cookie encryption is enabled using the WebFOCUS WFENCR context parameter, then the contents of both key files must match the content of the key file that was specified in the WFENCR_KEY_INFO context parameter in /ibi/WebFOCUS53/webapps/webfocus53/WEB-INF/web.xml.
6. Create the key file(s) on disk and input 8 or 24 hexadecimal bytes, depending on the Encryption Type. The following is an example of 24 hexadecimal bytes:

   ```
   5468658A6C617A7920646F67206A756D7073206F7665723F
   ```

   Save the key file(s) as a plain text file.
7. Reload the ReportCaster Web application for the new settings to take effect.

Reference: Key File Format

The encryption key information is stored in a plain text file and is represented by a sequence of bytes in hexadecimal notation. A hexadecimal byte is represented by 2 digits; each digit is either a number (0-9) or a letter (A-F). The key file must contain 8 hexadecimal bytes for a DES key and 24 hexadecimal bytes for a Triple DES key.

It may seem that more data is specified in the key file than is required (8 bits per byte times 24 bytes is 192 bits, which is greater than the 168 bits usually required for Triple DES). However, 192 bits are required when using a plain text file with these algorithms.

Sun JCE Provider Support

The DES and Triple DES algorithms were developed with Sun's Java Cryptography Extension (JCE) framework and currently implement only the Sun JCE provider class. Review the following scenarios to verify support for your Application server:

- If you are running WebFOCUS inside a Java Application server (or servlet engine) that runs on Sun's J2SDK 1.4.1 or higher, you do not need to take any action; the Sun JCE provider is included.
- If you are running another vendor's J2SDK 1.4.1 or higher, check their documentation to see if the Sun JCE provider is available in that implementation. For example, WebSphere 5.1 for HP-UX ships with a version of HP's J2SDK 1.4.1 that has both the Sun and IBM JCE providers. However, WebSphere 5.1 for AIX ships with an IBM J2SDK 1.4.1 that has only the IBM JCE provider and is therefore not currently supported by the optional encryption providers supplied by Information Builders.
- If your Java Application server is running on J2SDK 1.3.x (from any vendor), you must download and configure Sun's JCE 1.2.2. For example, WebSphere 5.0 on AIX ships with IBM J2SDK 1.3.1, which is only supported when you download and configure the Sun JCE.

  You can obtain the Sun JCE 1.2.2 software and installation documentation by accessing the JCE Downloads section on Sun's Java Technology Web site.

Procedure: How to Managed Reporting Trusted Signon

There is support for a trusted signon to Managed Reporting in which knowledge of the user's password is not required. This feature is used by WebFOCUS Open Portal Services to achieve single signon between supported third-party portals and Managed Reporting. It is also used by ReportCaster to access the Managed Reporting Repository when Managed Reporting is configured with an external authentication driver (for example, the Managed Reporting Realm Driver).

The trusted relationship is established through a configurable external key shared by ReportCaster, Open Portal Services, and WebFOCUS. The strength of this feature can be increased through optional WebFOCUS encryption providers, which are set using the WebFOCUS WFENCR context parameter and include two Triple DES algorithms.

For more information about the optional WebFOCUS encryption providers, see *Technical Memo 4564: Optional Encryption Providers for WebFOCUS*.

Enhanced Single Signon Support for Open Portal Services

WebFOCUS Open Portal Services supports secure signon integration with supported third-party portal products. After receiving the user's ID from the portal product via a secure channel, Open Portal Services initiates a trusted Managed Reporting signon on behalf of the user to avoid the subsequent Managed Reporting logon prompt. The strength of this feature can be increased through optional WebFOCUS encryption providers.

For information about configuring Open Portal Services, see the *WebFOCUS Open Portal Services Administrator's Manual*.

Configuring the Trusted MR Sign-On Setting for ReportCaster

When using a repository driver for Managed Reporting that performs external authentication, such as the Managed Reporting Realm Driver, you must set the Authentication Plug-in parameter in the ReportCaster Server Configuration tool to 'Trusted MR Sign-On'. Setting this value causes ReportCaster to make a trusted Managed Reporting signon on behalf of the user, instead of an explicit Managed Reporting signon with the user's ID and password.

Procedure: How to Configure the Trusted MR Sign-On Setting for ReportCaster

1. Access the ReportCaster Server Configuration tool in one of the following ways:
   - If you are on a Windows platform, you can access the configuration tool from the Start Programs menu by selecting *Information Builders*, *ReportCaster 53*, *Distribution Server*, *Configuration*, and then clicking *Edit*.
   - From Managed Reporting, click the clock icon. Java Web Start is launched and the ReportCaster Development and Administration Interface opens.
   - You can also access ReportCaster independent of Managed Reporting by typing the following URL:

     `http://hostname/rcaster/main/reportcaster.jsp`

     where:

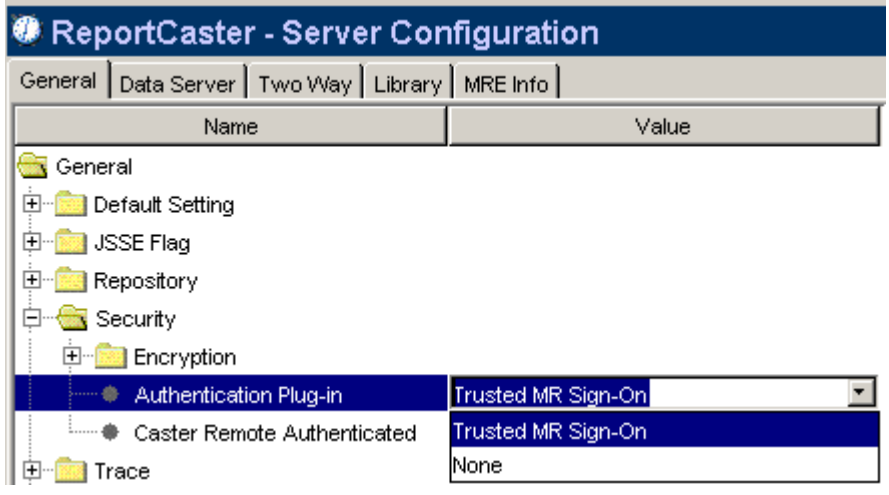
     hostname is the host name of the ReportCaster Distribution Server.

     In this case, since your user credentials have not been validated by Managed Reporting, you must type a valid ReportCaster user ID and password to log on to ReportCaster.
2. Select the *ReportCaster Server Configuration* link.

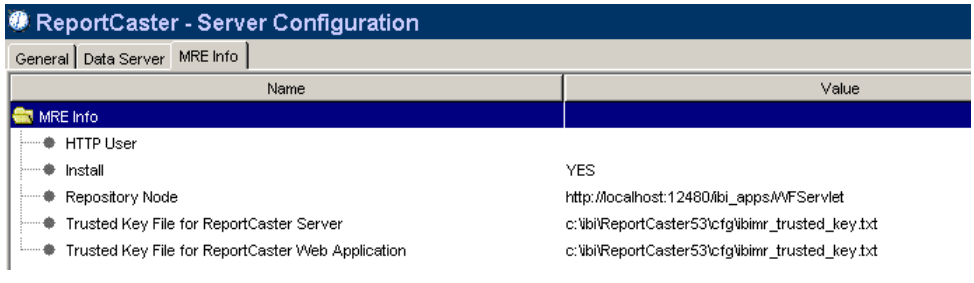
   Note: This step is not necessary if you accessed the configuration tool directly from the Start Programs menu.

The ReportCaster Server Configuration tool opens.

3. In the General tab, select the Security folder and locate the Authentication Plug-in setting. From the drop-down list, select *Trusted MR Sign-On*.



4. Click the MRE Info tab.



5. Verify that the "Trusted Key File for ReportCaster Server" and "Trusted Key File for ReportCaster Web Application" settings specify the location where the ibimr_trusted_key.txt file resides. The example above points to the same location; however, if ReportCaster is installed on a different machine than WebFOCUS, these settings must point to different locations.

   When you perform an InstallShield installation on Windows or UNIX, and you install Managed Reporting and ReportCaster together, these settings are populated automatically and both settings point to the same file, as shown above.

For a z/OS installation, or when ReportCaster and WebFOCUS are installed at different times or on different machines, you must manually type the location of the key file(s). Additionally, you must create the key file(s).

Note: The contents of this file (or files) must match the IBIMR_TRUSTED_KEY setting in the cgivars.wfs file.

6. Click the *Save* icon, or select *Save* from the Action menu. A message appears asking for confirmation that you want to save the changes to the configuration file. Click *Yes*.
7. Restart the ReportCaster Distribution Server.
8. Reload the ReportCaster Web application.

CHAPTER 11

Server Enhancements

This section describes server new features in Version 5 Release 3.

Topics:

Cluster Manager Server

- Large-Scale Application Deployment Across Multiple Servers

Performance

- Using the Stress Test Tool to Fine-Tune and Test the Server
- Enhanced Stress Test Tool Options
- Server Check Up Daemon
- Enhanced Management of Shared Memory

Security

- Restricting Host Names
- Securing the Web Console
- Authenticating Users at the Database Level
- Running a Server in LDAP Security Mode
- LDAP Support
- Specifying the Security Scope

Server Administration

- E-mail Notification for Crashed or Aborted Agents
- Special Character Support in Names
- Support for User-Level Profiles
- Limiting the Time Allowed for a Connection to the Server
- Controlling a Web Session Expiration Time
- Unlimited Number of Administration IDs
- Granting Application Administrator Privileges to All Users
- National Language Support Default Code Page
- Baltic Language Support on Server

Diagnostics

- Specifying the Life Span for the Server Activity Log
- Displaying IP Names in the Server Activity Log
- Specifying the Location of Recording/Playback Files

Data Resources

- Reading From and Writing to Large Files

Platform Support

- Platform Support

Connectors

- Connector for CICS
- Baltic Language Support on Client

Large-Scale Application Deployment Across Multiple Servers

In this section:

Installing and Configuring the Cluster Manager Server

Configuring Subservers for Cluster Manager Server

Configuring the Client for Cluster Manager Server

The Cluster Manager Server supports large-scale deployment of applications across multiple servers, with intelligent fail-over, load balancing, and performance monitoring capabilities.

Prior server releases provided a configuration option within the client to support clustered servers. When opening a new connection, the client selected a server at random from its list of clustered servers and attempted to make the connection. If the connection failed, the client selected another server, and continued through the list until it found a server that was available. This dispatch capability provided the essentials for load balancing and fail-over.

The Cluster Manager Server improves load balancing and reliability by adding a lightweight layer of management and control over multiple servers. The Cluster Manager Server provides:

- Greater intelligence and flexibility in selection of an available server, for optimal load balancing.
- A monitoring tool that an administrator can use to track the system load in real time.
- A system log that you can use to audit and account for usage and performance of each server.
- The ability to start a new server automatically as the load requires.

When the Cluster Manager Server is started, it establishes a monitoring thread for each of its defined servers, and polls these at regular intervals using TCP to determine basic performance statistics, including:

- Mean response time for default service
- Maximum agents used per service
- Current agents used per service
- Queue size
- Deferred queue size
- Available disk space

When an application needs to open a new connection to one of these servers, it submits a request to the Cluster Manager Server using HTTP. The Cluster Manager Server selects a server based on information about availability and current load, and directs the application to use that server. It excludes non-functioning and overloaded servers, and balances the load between all available servers.

Installing and Configuring the Cluster Manager Server

You can install the Cluster Manager Server on any mid-range platform (including Windows and Linux) using the standard server installation procedure. The Cluster Manager Server has its own license key.

The Cluster Manager Server is a specialized server, with standard configuration and startup files (for example, edaserve.cfg, odin.cfg, edastart.bat). It operates with no agents.

The communication configuration file (odin.cfg) contains the following nodes:

- One HTTP listener node (CLASS = AGENT) to support the real-time monitor.
- One TCP listener node (CLASS = AGENT) to communicate with the clustered servers. The clustered servers must also be configured with a TCP protocol. Other communication protocols are not supported.
- One cluster management node (CLASS = CLM), which defines:
  - A port through which applications submit requests for server assignments, using the PORT setting. The default is the HTTP listener port, but you may specify an alternate port, for security or other reasons.
  - Polling rules for how the Cluster Manager Server gathers and stores statistics about the performance of clustered servers, using the POLLING_INTERVAL and POLLING_HISTORY settings.
  - An option to permit the Cluster Manager Server to adjust the configuration of its servers or start reserved servers to minimize response time, using the AUTO_CONFIG setting.
  - An option for the Cluster Manager Server to configure, start, or stop a clustered server if its response time is continuously above or below the value specified using the MAX_RSP_TIME setting, for the last number of polls specified using the AUTO_CONFIG_THRESHOLD setting.
  - An option to log cluster statistics, using the LOGGING setting.
  - A dispatch method that gives the administrator the choice of four different algorithms, using the DISPATCH_METHOD, MAX_RSP_TIME, and RUNNING_AVG_PERIOD settings.

- One cluster node (CLASS = CLUSTER), which defines the list of available clustered servers, using the ALTERNATE setting.
- Multiple outbound nodes (CLASS = CLIENT), which define the individual servers. If the Cluster Manager Server is authorized to start and stop its servers, you must specify additional settings in these nodes:
  - TYPE = RESERVED
  - REMOTE_EDASTART and REMOTE_USER_PROFILE

Configuring Subservers for Cluster Manager Server

Configure remote servers managed by the Cluster Manager Server as standard servers. Each subserver requires a TCP listener.

Configuring the Client for Cluster Manager Server

The configuration requirements for a client used with a Cluster Manager Server depend on whether the client is installed on the same physical machine as the Cluster Manager Server, or if it is installed on a separate machine:

- If the client is installed on the same machine, it can share the same configuration file.
- If the client is installed on a remote machine, its configuration file requires a TCP listener node and a cluster node. It does not require a node for each of the clustered servers, but instead it obtains the list from the Cluster Manager Server. In this configuration, the cluster node (CLASS = CLUSTER) uses the REMOTE_CLM_HOST and REMOTE_CLM_PORT settings to identify the Cluster Manager Server, and it obtains the list of alternate servers from that location.

Using the Stress Test Tool to Fine-Tune and Test the Server

The Stress Test tool enables you to fine-tune and test the server by running one internal stored procedure many times in a given interval of time. This process is referred to as Stress mode.

Procedure: How to Run a Stress Test

1. Start the server and open the Web Console.
2. In the navigation pane on the left, click *Procedures*.

   The Editing and Running Procedures page opens.
3. In an application folder under the Procedures folder, click a procedure and then choose *Run Stress*.

   The Playback of HTI Script Files page opens in the right pane.
4. In the Number of Threads field, enter the number of times you want the procedure to execute.
5. In the Test Description field, enter a name for your stress test.
6. Click *Start*.
7. To view stress test results, in the navigation pane on the left, expand the Stress Test Statistics folder, then click either the Basic Report or Extended Report.

Enhanced Stress Test Tool Options

The Advanced Options feature on the Playback of HTI Script Files page allows you to specify additional playback options when conducting a stress test.

Reference: Enhanced Stress Test Tool Options

Option	Description
Result	By default, stores all data received by a thread in a single file (One file per thread option). Alternatively, you can store all data received by a request in a single file (One file per request option), or discard all results (Discard all option).
Submit as deferred	Sends a request as deferred.
Keep alive for	Causes every thread to repeat a request for a specified time.

Option	Description
Redirect to ODIN node	Sends a request to the node defined in the server communications configuration file, odin.cfg.
Redirect to HTTP	Sends a request to the Web server (HTTP listener), for example, www.myhost.com:8101.

Server Check Up Daemon

To improve the throughput of Workspace Manager, the server check up process, which was part of the main Workspace process, now runs independently as a separate daemon. The server check up process initializes and checks various states and takes action. For example, the it stops agents that are inactive past the idle limit.

Enhanced Management of Shared Memory

When the server starts, it checks for leftover shared memory, and automatically clears it or reuses it.

Restricting Host Names

How to:

Restrict Host Names in the Server Communications Configuration File

Restrict Host Names From the Web Console

You can restrict the host names that the listener will accept. Specify IP addresses in base 256 standard dot notation.

To allow a specific IP address, specify the full number. To allow a range of IP addresses, use an asterisk (*) to represent the range. For example, the following entries

```
123.*
123.456.*
123.456.789.*
```

restrict to all IP addresses beginning with those numbers.

You can specify up to six values. The internal default is *.*.*.*, which allows all IP addresses.

Syntax: How to Restrict Host Names in the Server Communications Configuration File

Include the following setting in the server communications configuration file, odin.cgf

```
RESTRICT_TO_IP = host_name, IP_address, ...
```

where:

host_name

Is a host name that the listener will accept.

IP_address

Is an IP Version 4 address in base 256 standard dot notation.

Procedure: How to Restrict Host Names From the Web Console

1. Start the server and open the Web Console.
2. In the navigation pane on the left, click *Listeners*.

   The Listeners and Special Services page opens.
3. In the navigation pane on the left, in the Configured folder under the Listeners folder, click a protocol and then choose *Properties*.

   The Listener Configuration page for the selected listener opens in the right pane.
4. In the Restrict_to_IP field, enter the host name or IP address the listener will accept.
5. Click *Save and Restart*.

Securing the Web Console

Security mode PTH, which replaces WCPROTECT, controls access to the Web Console by authenticating users against the list defined with server_admin_id in the server configuration file, edaserve.cfg. In this mode, the server does not authenticate user credentials at the operating system level. All server processes run as a single user ID from the operating system point of view. There is no operating system impersonation of data agents.

Since it relies on the user credential and administration privileges specified in the server configuration file, security mode PTH requires:

- Server Administrator passwords be configured before starting the server.
- *Individual* IDs and passwords in the server configuration file. You cannot use a wildcard in the server_admin_id to grant application administrator privileges to all authenticated users.

Security mode PTH supports security scope WC. Designed to protect the Web Console, but not restrict access to other server resources, it does not support security scope ALL. Therefore, control of data resources is not possible in this mode.

Authenticating Users at the Database Level

Security mode DBMS controls access to server resources by authenticating user credentials supplied by client connections at the Database Management System (DBMS) level. In this mode, the server does not authenticate user credentials at the operating system level. All server processes run as a single user ID from the operating system point of view. There is no operating system impersonation of data agents.

Security mode DBMS requires that you:

- Identify the database engine to use for authentication.
- Specify the connection the server will use to pass user credentials from client requests to the database engine for authentication.

  Note that the server may have other DBMS connections in addition to the one used for the security passthru.

Procedure: How to Configure User Authentication at the Database Level

1. Start the server with no security (security mode OFF).
2. Open the Web Console.
3. If you have not already done so, from the Adapters page, configure the adapter and connection that the server will use to pass user credentials for client applications to the DBMS.
4. Test the connection.
5. In the navigation pane on the left, click *Workspace*, and then choose *Configure*.

   The Workspace Configuration page opens.
6. Click the *Access Control* tab.
7. From the security_dbms drop-down list, select the database engine to use for authentication.
8. From the security_connection drop-down list, select the connection the server will use to pass user credentials from client requests to the database engine for authentication.
9. In the administration level field, make sure that SERVER is selected.
10. From the server_admin_id drop-down list, select *New ID*, type your DBMS user ID, and click *Add*. You do not need to provide the password.
11. Click *Save*.
12. Stop the server.
13. Start the server with security mode DBMS.
14. Log on to the Web Console using the DBMS user ID you entered in Step 10.
15. Test the adapter connection.

Reference: Troubleshooting Security Mode DBMS

The following conditions will prevent access to the Web Console.

- An error in the security_dbms definition.
- The DBMS is down.
- The DBMS user ID is invalid.

To regain access to the console:

1. Stop the server using the text console.
2. Correct the problem.
3. Restart the server.

Running a Server in LDAP Security Mode

LDAP (Lightweight Directory Access Protocol) security mode currently applies only to a server running under Windows.

In LDAP mode, the user credentials from the client connection are authenticated through the established directory.

To run the server in this mode, export the environment variable EDAEXTSEC=LDAP before startup.

There is no impersonation at the level of the operating system. All the server processes run as a single user ID from the operating system point of view. There is no impersonation of data agents.

You must configure the Server Administrator password before starting a server in this security mode, either by providing it during installation or by running the following command from the EDACONF/bin directory:

```
edastart -change server_admin_id
```

LDAP Support

How to:

Specify a Secure Sockets Layer Session With LDAP in edaserve.cfg

Specify the LDAP Port Number in edaserve.cfg

Specify the LDAP Domain Name in edaserve.cfg

You can include settings in the server configuration file. edaserve.cfg, that apply to LDAP (Lightweight Directory Access Protocol) security

The server must be running in LDAP security mode (currently Windows only) for these settings to apply.

Syntax: How to Specify a Secure Sockets Layer Session With LDAP in edaserve.cfg

```
ldap_encryption = {y|n}
```

where:

y

Enables an encrypted Secure Sockets Layer (SSL) session with the LDAP server.

n

Disables an encrypted SSL session with the LDAP server. N is the default value.

Syntax: How to Specify the LDAP Port Number in edaserve.cfg

```
ldap_port = {number}
```

where:

number

Is the TCP port number of the LDAP server to which to connect. It is a positive integer. 389 is the default value. 636 is the default value for an SSL connection.

Syntax: How to Specify the LDAP Domain Name in edaserve.cfg

```
ldap_server = name
```

where:

name

Is the domain name running the LDAP server. If you do not supply a value, Information Builders assumes the default LDAP server.

Specifying the Security Scope

How to:

Define the Security Scope in the Server Configuration File

Define the Security Scope From the Web Console

The security scope dimension gives you added flexibility in securing your server resources. Use this dimension to apply the security mode in effect to:

- All server resources
- Web Console only

The following table lists valid combinations of security scope and security mode.

Security Mode	Security Scope	
	All Server Resources	Web Console Only
ON	Yes	No
PTH	No	Yes
DBMS	Yes	Yes
LDAP (currently Windows only)	Yes	Yes
OFF	No	No

Syntax: How to Define the Security Scope in the Server Configuration File

Include the following setting in the server configuration file, edaserve.cfg

```
security_scope = {ALL|WC}
```

where:

`ALL`

Applies the security mode in effect to all server resources. This value applies to security mode ON, DBMS, and LDAP.

`WC`

Applies the security mode in effect to the Web Console only. This value applies to security mode PTH, DBMS, and LDAP.

Procedure: How to Define the Security Scope From the Web Console

Note: You must have Server Administrator privileges to perform this procedure.

1. Start the server and open the Web Console.
2. In the navigation pane on the left, click *Workspace*, and then choose *Configure*.

   The Workspace Configuration page opens.
3. Click the *Access Control* tab.
4. In the security_scope field, click the appropriate radio button.
5. Click *Save*.

E-mail Notification for Crashed or Aborted Agents

When configuring the server, you can enter an e-mail address in the Web Console to indicate whom to notify via e-mail if an agent crashes or is aborted.

Procedure: How to Specify E-Mail Notification

1. Start the server and open the Web Console,
2. From the navigation pane on the left, click *Workspace*, then *Configure*.

   The server configuration page opens in the right pane.
3. Click the *E-Mail Notification* tab at the top of the page.
4. Complete the fields as follows:

`smtp_host`	Enter the IP Version 4 address of the SMTP mail server.
`sender_email`	Enter the address that will appear in the From field of the email message.
`server_admin_email`	Enter the email address of the recipient.
`wsm_email`	Select the event or events that will trigger email notification. `Crashed` indicates an error detected by the operating system. `Aborted` indicates an error detected by the program.

5. Click *Save*.

Special Character Support in Names

Special characters are supported in administrator and user profile names. For example, a server administrator name can include a space, as in 'John Doe.'

Support for User-Level Profiles

The Web Console supports the specification of a user-level profile in which the CONNECTION_ATTRIBUTES command is stored. This feature gives the server or application administrator control over the level at which connections to data sources are made.

Procedure: How to Specify a User-Level Profile

1. Start the server and open the Web Console.
2. From the navigation pane on the left, click *Data Adapters*.

   The Configuring Data Adapters page opens.
3. From the navigation pane on the left, click an adapter.

   The corresponding configuration page opens in the right pane.
4. Complete the configuration parameters.
5. From the Select profile drop-down list, choose *New Profile*.

   The Profile Name field is added to the page.
6. In the Profile Name field, type the name of the user profile.
7. Click *Configure*.

Limiting the Time Allowed for a Connection to the Server

You can limit the time allowed for a connection to the server. You set this value in the scope of an agent service. If queuing is enabled, when the limit is reached, the session is removed from the queue and the active agent is stopped.

Syntax: How to Limit the Time Allowed for a Connection to the Server

Include the following setting in the server configuration file, edaserve.cfg:

```
connection_limit = seconds
```

where:

seconds

Is the maximum number of seconds for a connection. The default is an unlimited number of seconds.

Controlling a Web Session Expiration Time

How to:

Control a Web Session Expiration Time in odin.cfg

Control a Web Session Expiration Time From the Web Console

Each browser instance is assigned a Web session with a default expiration of 600 seconds. The session is maintained via a cookie.

You can control the time for which the current Web Console user credentials remain in effect, using a setting in the server communications configuration file, odin.cfg. The setting in odin.cfg replaces the setting wc_cookie_expiration in the server configuration file, edaserve.cfg, in earlier releases.

This feature applies to an HTTP listener.

Syntax: How to Control a Web Session Expiration Time in odin.cfg

```
SESSION_EXPIRATION = {seconds|600}
```

where:

seconds

Is the number of seconds for which the current Web Console user credentials remain in effect. A valid value is from 1 to 2147483646. 600 is the default value.

Procedure: How to Control a Web Session Expiration Time From the Web Console

1. Start the server and open the Web Console.
2. In the navigation pane on the left, click *Listeners*.

   The Special Services page opens.
3. In the navigation pane on the left, in the Configured folder under the Listeners folder, click *HTTP* and then choose *Properties*.

   The Listener Configuration page for HTTP opens in the right pane.
4. In the SESSION_EXPIRATION field, enter the number of seconds for which the current Web Console user credentials remain in effect.
5. Click *Save and Restart*.

Unlimited Number of Administration IDs

There is no limit to the number of authorized users assigned to the SERVER, APPLICATION, and OPERATOR server administration roles.

Granting Application Administrator Privileges to All Users

To facilitate application management, you can grant application administrator privileges to all authenticated users. You can implement this easily using the wildcard character, an asterisk (*), in the server_admin_id setting in the server configuration file, edaserve.cfg.

You cannot use this feature in conjunction with security mode PTH, where user authentication relies on *individual* IDs and passwords in the server configuration file.

Syntax: How to Grant Application Administrator Privileges to All Users

Include the following setting in the server configuration file, edaserve.cfg:

```
server_admin_id=*::APP
```

National Language Support Default Code Page

The National Language Support (NLS) configuration procedure for the server uses 137 as the default code page on Windows and UNIX.

A large number of applications have replaced the OEM IBM PC-compatible family of MS-DOS code pages with their ANSI counterpart. Windows and UNIX systems use ANSI code pages to display data in Graphical User Interface (GUI) tools and also to read from, and write to, file types such as Excel, PDF, SQL databases, and other popular forms of storage.

In previous releases, OEM was the default configuration for Developer Studio and servers running on Windows and UNIX.

With code page 137, the default setting of SET OEMTOANSI is OFF. If you access ANSI data, you do not need to set this parameter in a profile or procedure. Code page 137 allows the server to treat incoming data as ANSI by turning off OEM to ANSI conversion.

Code page 137 affects your enterprise only if it uses default OEM FOCUS data sources or flat files. If you store data in ANSI code page 137 or 1252, you do not have to configure for NLS.

If you are using Developer Studio and your data sources are stored in ANSI format, you do not need to configure Developer Studio so that procedures and Master Files are also stored in ANSI format.

OEM code page support is available in Information Builders products. To convert OEM data sources (for example, OEM FOCUS data sources or flat files) to an ANSI encoding scheme, ask your Information Builders representative for the NLS conversion tool.

Baltic Language Support on Server

You can configure the server for the Baltic language using the NLS Configuration Wizard scroll-down list on the server console. Navigate to the NLS Configuration Wizard window by choosing *NLS* from the console's navigation pane.

The code pages are:

CP01112—IBM MF Baltic Multilanguage

CP00921—ISO-8859-4 (Latin 4, Baltic Multilanguage)

CP01257—Windows, Baltic (Latin 7)

Specifying the Life Span for the Server Activity Log

You can specify the maximum number of days that the server activity log, edaprint, remains active. When the specified number is reached, the server archives the current log and creates a new log.

Syntax: How to Specify the Life Span for the Server Activity Log

Include the following setting in the server configuration file, edaserve.cfg

```
edaprint_max_days = number_of_days
```

where:

number_of_days

Is the maximum number of days that the server activity log, edaprint, remains active. When the specified number is reached, the server archives the current log and creates a new log. The default value is 0, which represents an unlimited number of days.

Displaying IP Names in the Server Activity Log

You can request that the server activity log, edaprint, display Internet Protocol (IP) names instead of IP addresses. The server replaces the addresses with names via DNS lookup.

Syntax: How to Display IP Names in the Server Activity Log

Include the following setting in the server configuration file, edaserve.cfg:

```
edaprint_ipname = y
```

Specifying the Location of Recording/Playback Files

You can specify the directory in which recording and playback files are stored.

Syntax: How to Specify the Location of Recording/Playback Files in edaserve.cfg

```
httptst_dir = path
```

where:

path

Is the directory in which recording and playback files are stored. It is a platform-specific path name. The catalog directory under the configuration directory is the default value, for example, on Windows, \ibi\srv53\wfs\catalog.

Reading From and Writing to Large Files

The server can read from and write to flat files and fixed-format sequential files over 4 gigabytes in size under the Hierarchical File System (HFS) and zFS file system.

You do not need to customize any settings or perform any configuration steps to enable this capability.

Platform Support

Version 5 Release 3 adds support for the following platforms:

- AIX 52
- HP UX 11.11
- SUN 9

Connector for CICS

The Connector for CICS is supported by the CICS Transaction Server for z/OS Version 1.3 or higher.

Baltic Language Support on Client

You can configure the client for the Baltic language using the graphical prompts on the console.

For the WebFOCUS Client, navigate to the applicable window by choosing *NLS Settings* under *Configuration* from the WebFOCUS Administration Console navigation pane.

For the iWay Client, navigate to the NLS Configuration Wizard window by choosing *NLS* from the configurator's navigation pane on the Home page.

The code pages are:

CP00921—ISO-8859-4 (Latin 4, Baltic Multilanguage)

CP01257—Windows, Baltic (Latin 7)

CHAPTER 12

Adapter Enhancements

This section describes Adapter new features in Version 5 Release 3.

For more information about adapters, see the *iWay Adapter Administration for UNIX, Windows, OpenVMS, OS/400, OS/390 and z/OS* manual.

Note: All adapters can be used for WebFOCUS Reporting and SQL requests, and as sources for DataMigrator flows.

Topics:

Enhancements for Individual Adapters

- Adabas
- Adabas Stored Procedures
- CICS Transactions
- C-ISAM
- DATACOM
- DB2
- Enterprise Java Beans
- Essbase
- IMS
- IMS Transactions
- Informix
- Ingres
- JDBC (Generic)
- J.D. Edwards
- Microsoft SQL Server
- Oracle
- Oracle E-Business Suite
- PeopleSoft
- Progress
- RMS
- SAP BW
- SAP R/3
- Sybase ASE
- Sybase IQ
- System 2000
- Tamino
- Teradata
- TOTAL
- VSAM
- Web Services
- XML
- XA Support
- Aggregate Awareness Support
- Cluster Joins

Generic Adapter and Data Access Enhancements

- Web Console Enhancements
- General Adapter Features

Adapter for Adabas

In this section:

Controlling Adabas Multifetch for Join Operations

Controlling Data Retrieval Types

Handling Unreadable Sub or Superdescriptor Fields

How to:

Set Adabas FETCHJOIN

Set Adabas Dynamic CALLTYPE

Handle Unreadable Sub or Superdescriptor Fields

Example:

Using Dynamic CALLTYPE

The Adapter for Adabas enables you to:

- Control Adabas multifetch join operations on the session level.
- Set the data retrieval type per session, file, or segment by switching dynamically between physical and logical reads.
- Handle unreadable sub or superdescriptor fields.

These features are available on the OS/390 and z/OS operating systems.

Controlling Adabas Multifetch for Join Operations

You can use the FETCHJOIN command to take advantage of Multifetch efficiencies in Join operations for a session. This feature is particularly useful when you are joining to a base file in which sorting is based on the key field that is used for the join.

Syntax: How to Set Adabas FETCHJOIN

```
ENGINE ADBSINX SET FETCHJOIN {ON|OFF}
```

where:

`ADBSINX`

Indicates the Adapter for Adabas.

`ON`

Sets the FETCHJOIN feature on for the user session. ON is the default value.

`OFF`

Sets the FETCHJOIN feature off for the user session. This value is recommended when joining with a base file that is unsorted by the key field used for joining. This option avoids buffering and reduces processing time.

Controlling Data Retrieval Types

The SET CALLTYPE command enables you to set the data retrieval type per session, file, or segment by switching dynamically between physical and logical reads.

Syntax: How to Set Adabas Dynamic CALLTYPE

```
ENGINE ADBSINX SET CALLTYPE ctype
ENGINE ADBSINX SET CALLTYPE ctype AFD afd
ENGINE ADBSINX SET CALLTYPE ctype AFD afd SEGNAME segname
ENGINE ADBSINX SET ?
ENGINE ADBSINX SET CALLTYPE DEFAULT
```

where:

`ADBSINX`

Indicates the Adapter for Adabas.

`ctype`

Is any CALLTYPE value: FIND/RL/MIXED.

`afd`

Is any valid Access File name.

`segname`

Is any valid ADBS segname in the Access File.

?

Queries the current settings.

DEFAULT

Returns to the default settings for all previous settings. The CALLTYPE is read from the Access File.

Example: Using Dynamic CALLTYPE

The following examples illustrate the use of variations of dynamic CALLTYPE syntax:

```
ENGINE ADBSINX SET CALLTYPE FIND
```

Uses FIND as the type of data retrieval call for all files.

```
ENGINE ADBSINX SET CALLTYPE RL AFD EMPFILE
```

Retrieves data for the EMPFILE using RL as the type of data retrieval call.

Note that you can issue several commands for different files. Each command must be issued separately. Changes are cumulative. For example, the following commands

```
ENGINE ADBSINX SET CALLTYPE RL AFD EMPFILE

ENGINE ADBSINX SET CALLTYPE FIND AFD EMP2

ENGINE ADBSINX SET CALLTYPE MIXED AFD VEHICLES

ENGINE ADBSINX SET CALLTYPE FIND AFD EMPFILE SEGNAME S02
```

retrieve data for the EMPFILE using FIND as the type of data retrieval call for a particular ADBS segment (segment S02).

```
ENGINE ADBSINX SET ?
```

Displays your settings.

```
ENGINE ADBSINX SET CALLTYPE DEFAULT
```

Returns to the default settings. This command resets all SET CALLTYPE commands for all Access Files.

Handling Unreadable Sub or Superdescriptor Fields

The Adapter for Adabas cannot read sub/superdescriptors that are derived from PE/MU access types and defined in a root segment. These types of fields may be used only in an Adabas FIND command that produces a "trusted" answer set. However, you can add the description parameter USE=FIND in the Access File for sub and superdescriptor fields that cannot be read by the adapter.

Syntax: How to Handle Unreadable Sub or Superdescriptor Fields

Add the following segment attribute to the Adabas Access File:

```
[,USE={FIND|ANY}]
```

where:

`USE`

Indicates a method for handling unreadable sub or superdescriptor fields that are derived from PE or MU access types and defined in the root segment. Possible values are:

`FIND` indicates that the S1 command will be issued against such a field even if CALLTYPE is RL.

`ANY` indicates that fields are not of the sub/superdescriptor types. ANY, or the absence of a USE= entry, are the default values.

Adapter for Adabas Stored Procedures

The Adapter for Adabas Stored Procedures enables you to invoke an Adabas stored procedure, which is a Natural subprogram that has been created and tested using Natural facilities.

Note: This adapter is only available on the z/OS and OS/390 operating systems.

You invoke a stored procedure by:

- Issuing a data retrieval command in an SQL request.
- Issuing a Data Manipulation Language (DML) request. (DML is iWay's internal retrieval language, also known as TABLE.)
- Executing a remote procedure call (RPC).

This enables you to invoke an Adabas stored procedure from a variety of environments, including WebFOCUS and DataMigrator.

You can pass input parameter values to a stored procedure by specifying filtering criteria in the request or to an RPC by passing a parameter list. You retrieve output as an answer set.

You use the Web Console to generate a synonym for a stored procedure using information from Natural data areas; the synonym maps the procedure's input and output parameters.

Adapter for CICS Transactions

An intermediate program (proxy) allows existing customers using CICS Stored Procedures Gateway and TP-CICS products, to reuse their existing applications using the Adapter for CICS Transactions with a Full-Function Server.

The Adapter for CICS Transactions processes input parameters, creates and sends requests to the CICS Transaction Server, and creates an answer set based on the received response.

This adapter has three different transport layers:

- EXCI for OS/390 and z/OS platforms.
- TCP/IP via AnyNet for UNIX and Microsoft Windows platforms.
- LU6.2 for UNIX and Microsoft Windows platforms.

The adapter can be used for WebFOCUS reporting and SQL access to CICS programs, and as a source for DataMigrator flow processing. It supports:

- Two-phase commit, which enables the adapter to participate in an XA-compliant global transaction. For information about XA compliance, see *XA Support* on page 12-41.
- Web Console synonym creation based on a COBOL File Definition (FD).
- Transactional access as a FOCUS procedure.

Adapter for Micro-Focus C-ISAM and FairCom c-tree ISAM

How to:

Identify the FairCom c-tree ISAM Load Library Files

Specify the Location of a FairCom c-tree ISAM File

Specify the Location of a FairCom c-tree Parameter File

The Adapter for Micro Focus C-ISAM is available on the Windows and SUN operating systems.

The Adapter for FairCom c-tree ISAM has been added to the C-ISAM family of adapters. To prepare the environment, you must add the location of the c-tree ISAM load libraries to the library path. When configuring the adapter, you must specify the locations of FairCom c-tree ISAM files and a FairCom c-tree parameter file.

Syntax: How to Identify the FairCom c-tree ISAM Load Library Files

```
LD_LIBRARY_PATH=path
export LD_LIBRARY_PATH
```

where:

path

Is the location of the FairCom c-tree ISAM load library files.

Note: If the server is running with security on, the IBIPATH variable needs to be used in place of LD_LIBRARY_PATH.

Syntax: How to Specify the Location of a FairCom c-tree ISAM File

```
FILEDEF file_name DISK file_location
```

where:

file_name

Is the data file name.

file_location

Is the full path and file name of the data file, without the file extension.

Note:

- For each data file, there must be a corresponding index file and a corresponding parameter file.
- Read/write permissions must be given for all the above mentioned files.
- By default, the parameter file name is assumed to be the file_location followed by the ".p" extension.
- You can override the default parameter file name by specifying it in the environment variable EDACTPARMF.
- For the Adapter for FairCom c-tree ISAM, read-only access is supported.

Syntax: How to Specify the Location of a FairCom c-tree Parameter File

```
EDACTPARMF=path
export EDACTPARMF
```

where:

path

Is the location of the FairCom c-tree parameter file.

Note:

- By default, the parameter file name is assumed to be the file_location (as specified in a FILEDEF command or the DATASET attribute of a Master File), followed by the ".p" extension.
- You can override the default parameter file name by specifying it in the environment variable EDACTPARMF. This is required when selecting data from multiple ISAM files in a single query through a join. For such queries, a parameter file that describes all the tables involved must exist, and its name must be specified in EDACTPARMF.

Adapter for DATACOM

The Adapter for DATACOM is supported on UNIX System Services.

The adapter supports synonym creation from the Web Console.

Adapter for DB2

In this section:

Using DB2 Cube Views

Mapping Metadata for DB2 Cubes Views

The Adapter for DB2 supports the following features:

- Bulk Load capability on the OS/390 and z/OS operating systems.
- Two-phase commit with the CLI interface, using Resource Recovery System (RRS), on the OS/390 and z/OS operating systems.
- DB2 CLI for OS/400.
- DB2 Cubes Views. See *Using DB2 Cube Views* on page 12-9.
- Stored procedures with input, output, and inout parameters. For details, see *Stored Procedures in Relational Adapters* on page 12-54.
- Aggregate awareness. For details about this optimization feature, see *Aggregate Awareness in RDBMSs* on page 12-43.

Using DB2 Cube Views

The Adapter for DB2 supports Cube Views as an object type. You can specify Cubes as the object type for which you want to create synonyms.

Before you can use the Adapter for DB2 with Cube Views, you must define DB2 connections for the database(s) containing the DB2 cube views.

Mapping Metadata for DB2 Cubes Views

Example:

Sample DB2 Cube View Master File

Synonyms are generated for Cubes (not Cube Models). These synonyms reflect the structure of the cube and its attributes and measures, rather than the structure of the underlying DB2 tables and their columns.

The Master File synonym component has several segments:

- The root segment corresponds to the Cube Facts.
- The children segments correspond to the Cube Hierarchies.

The fields in the root segment reflect the Cube Measures. Field names and titles are generated based on measure business names, while aliases are generated based on measure names.

- The PROPERTY attribute for these fields contains the word Measure (or Calculated Measure for calculated measures).
- The REFERENCE attribute contains the aggregated expression for measures that are based on simple columns (not expressions) and have aggregations that match those available in the DML.

Example: Sample DB2 Cube View Master File

```
FILENAME=BASEAPP/COMPLEX_MEASURES__C_, SUFFIX=DB2CV    , $
  SEGMENT=SALESCF, SEGTYPE=S0, $
    FIELDNAME=4ADDS, ALIAS=4adds, USAGE=I11, ACTUAL=I4, MISSING=ON,
      TITLE='4adds',
      REFERENCE=CNT.4ADDS, PROPERTY=MEASURE,  $
    FIELDNAME=POWEROFADDS, ALIAS=powerofadds, USAGE=D21.2, ACTUAL=D8,
MISSING=ON,
      TITLE='powerofadds',
      PROPERTY=MEASURE,  $
    FIELDNAME=PROFIT_CONST, ALIAS=profit*const, USAGE=D21.2, ACTUAL=D8,
MISSING=ON,
      TITLE='profit*const',
```

```
      PROPERTY=MEASURE,  $
    FIELDNAME=RANDOM, ALIAS=random, USAGE=I11, ACTUAL=I4, MISSING=ON,
      TITLE='random',
      REFERENCE=CNT.RANDOM, PROPERTY=MEASURE,  $
    FIELDNAME=3_COLS_WITH_MIXTUREOF_FUNC, ALIAS='3 cols with mixtureof
FUNC', USAGE=D21.2, ACTUAL=D8, MISSING=ON,
      TITLE='3 cols with mixtureof FUNC',
      PROPERTY=MEASURE,  $
    FIELDNAME=ROUND_OF_ANOTHER_MEAS, ALIAS='round of another meas',
USAGE=D21.2, ACTUAL=D8, MISSING=ON,
      TITLE='round of another meas',
      PROPERTY=MEASURE,  $
  SEGMENT=PRODUCT__CH_, SEGTYPE=U, PARENT=SALESCF, $
    FIELDNAME=PRODUCT_GROUP_ID, ALIAS=product_group_ID, USAGE=I11,
ACTUAL=I4, MISSING=ON,
      TITLE='product_group_ID',
      WITHIN='*product (CH)', $
    FIELDNAME=PRODUCT_LINE_ID, ALIAS=product_line_ID, USAGE=I11,
ACTUAL=I4, MISSING=ON,
      TITLE='product_line_ID',
      WITHIN=PRODUCT_GROUP_ID, $
    FIELDNAME=PRODUCT_LINE_NAME, ALIAS='12  product_line_ID
product_line_name', USAGE=A25V, ACTUAL=A25V, MISSING=ON,
      TITLE='product_line_name',
      REFERENCE=PRODUCT_LINE_ID, PROPERTY=CAPTION,  $
SEGMENT=STORE__CH_, SEGTYPE=U, PARENT=SALESCF, $
    FIELDNAME=STORE_LOCATION_ID, ALIAS='**** store_location_ID_1',
USAGE=I11, ACTUAL=I4, MISSING=ON
      TITLE='store_location_ID',
      WITHIN='*store (CH)', $
    FIELDNAME=STORE_ADDRESS, ALIAS='store_location_ID_1
_store_address', USAGE=A25V, ACTUAL=A25V, MISSING=ON,
      TITLE='store address',
      REFERENCE=STORE_LOCATION_ID, PROPERTY=UDA,  $
    FIELDNAME=STORE_CITY, ALIAS='store_location_ID_1   _store_city',
USAGE=A45, ACTUAL=A45, MISSING=ON,
      TITLE='store_city',
      REFERENCE=STORE_LOCATION_ID, PROPERTY=UDA,  $
   FIELDNAME=STORE_ID, ALIAS=store_ID, USAGE=I11, ACTUAL=I4, MISSING=ON,
TITLE='store_ID',
      WITHIN=STORE_LOCATION_ID, $
```

Adapter for Enterprise Java Beans

The Adapter for Enterprise Java Beans™ supports Session Beans.

Adapter for Essbase

In this section:

Adding Measures and Scenarios to Synonyms

Specifying ALIAS and Member Names in One Request

The Adapter for Essbase supports setting measures and scenarios from the Web Console during the synonym creation process.

Essbase also supports the specification of ALIAS and member names in one request.

The Adapter for Essbase support Essbase 7 on UNIX platforms (AIX,SUN, and HP).

Adding Measures and Scenarios to Synonyms

You can choose measure and scenario options from Web Console Create Synonym panes.

Procedure: How to Choose Measure and Scenario Options From the Web Console

1. Start the Web Console and, in the navigation pane, click *Metadata*. The Managing Metadata page opens.

   To create a synonym, you must have configured the adapter.

2. Click *New Synonym* in the navigation pane to open the Select Adapter and Connection to Create Synonym pane.

3. Click a connection for the configured adapter. The Select Database from the Application for ESSBASE pane (Step 1 of 3) opens.

4. Select a database(s) from the list below the *Select Dimension* button.

5. If you wish to filter your selection(s), choose any of the following options:

Option	Description
Filter Dimensions	This check box enables you to retrieve a filtered list of Essbase Dimensions from which to choose a Scenario Dimension and/or a Measure Dimension. A *Name* input box is added to the selection pane. Type a string for filtering the dimension names, inserting the wildcard character (%) as needed at the beginning and/or end of the string. For example, type ABC% to select dimensions whose names begin with the letters ABC; %ABC to select dimensions whose names end with the letters ABC; %ABC% to select dimensions whose names contain the letters ABC at the beginning, middle, or end.
Measure	This option enables you to limit the number of fields in the Master File. • Choose *Yes* (the default) to change the Accounts tagged dimension without having to change the outline in the Adabas Database Server. With this setting, an actual field name is generated for every member of the chosen dimension in the Master File rather than producing the dimension in terms of generations. **Note:** If you select Yes, when you click *Select Dimension* in step 6, two drop-down lists will be added to the pane—*Select Measures* and *Select Scenarios*. • Choose *No* to limit the number of fields in the Master File. With this setting, all of the dimensions are interpreted as non-Accounts dimensions in the Master File and represented as generations. • **Note:** If you select No, when you click *Select Dimension* in step 6, only the *Select Scenarios* drop-down list appears in the pane. You cannot apply additional selection criteria for Measures.

Option	Description
Aggregate	This option enables you to control summing on non-aggregated fields in an Essbase request. • Choose *On* to enable summing on non-aggregated fields. • Choose *Off* to disable summing on non-aggregated fields.

6. Click *Select Dimension*. The Choose Measures and Scenarios (Step 2 of 3) pane opens. Any selection criteria you specified in the previous pane are reflected at the top of this pane. In addition, the dimensions that meet the specified criteria are listed in the Select Scenarios, and, if shown, the Select Measures, drop-down lists, which appear at the bottom of the pane.

7. If you wish to create a synonym based on a *normal dimension* (that is, one in which field descriptions are generated for the accounts dimension segment), simply click *Create Synonym*.

   Tip: If you wish to exercise control over several synonym field name processing options, go to step 10 in this procedure *before* you click *Create Synonym*.

8. If you wish to create a synonym based on a *pseudo accounts dimension* (that is, one in which a scenario dimension is generated in place of the accounts dimension segment), click the *Choose Scenario* check box, and then:

   a. Optionally, from the Select Scenario drop down list, specify a dimension from which you can later choose a member. (If you choose *None* (the default), no pseudo accounts dimension is generated.)

   If you do not want to use all members of the chosen dimension, click the *Filter* check box and, in the *Name* input box, type a string for filtering the scenario names, inserting the wildcard character (%) as needed at the beginning and/or end of the string.

   b. Click *Get Scenario*. The Select Scenario (Step 3 of 3) pane opens.

   c. From the list of Scenario Names at the bottom of the pane, choose the member(s) you would like to use to build the scenario dimension in the Master File.

   To select *all* members in the list, click the check box to the left of the *Scenario Name* column heading. (A message indicates that the selection of *all* members in the list may take some time. Click *OK* if you wish to proceed.)

   To select *specific* members, click the check boxes to the left of those names.

   d. Click *Create Synonym*.

   Tip: If you wish to exercise control over several synonym field name processing options, go to step 10 in this procedure *before* you click *Create Synonym*.

9. If you selected Measures/Yes (the default) in step 5, and you wish to generate a field name in the Master File for every member of a chosen Measures dimension:

   a. Select a measure from the Select Measures drop-down list.

      Note that *None* (the default) generates the field name for every member in the default Accounts tagged dimension in the Essbase outline.

   b. Click *Create Synonym*.

   Tip: If you wish to exercise control over several synonym field name processing options, go to step 10 in this procedure *before* you click *Create Synonym*.

10. Click the *Validate* check box if you wish to convert all special characters to underscores and perform a name check to prevent the use of reserved names. (This is accomplished by adding numbers to the names.) This parameter ensures that names adhere to iWay specifications.

    When the Validate option is unchecked, only the following characters are converted to underscores: '-' ; ' ' ; ' \' ; '/' ; ',' ; '$'. No checking is performed for names.

11. Click the *Make unique* check box if you wish to set the scope for field and group names to the entire synonym; this ensures that no duplicate names are used, even in different segments of the synonym. When this option is unchecked, the scope is the segment.

12. If appropriate, enter the following synonym processing parameters:

Parameter	Description
Select Application	Select an application directory. baseapp is the default value.
Prefix/Suffix	If you have tables with identical table names, assign a prefix or a suffix to distinguish them. For example, if you have identically named human resources and payroll tables, assign the prefix HR to distinguish the synonyms for the human resources tables. Note that the resulting synonym name cannot exceed 64 characters. If all tables and views have unique names, leave prefix and suffix fields blank.
Overwrite Existing Synonyms	To specify that this synonym should overwrite any earlier synonym with the same fully qualified name, select the *Overwrite existing synonyms* check box.

13. At whichever point you click *Create Synonym*, synonyms are created and added under the specified application directory.

    A status window displays the message:

    ```
    All Synonyms Created Successfully
    ```

14. From the message window, you can click *Go to Metadata page* to view, edit, test, or manage the new synonym.

Specifying ALIAS and Member Names in One Request

How to:

Specify ALIAS and Member Names in a Request

Example:

Generated Master File sample.mas

Using ALIAS and Member Names in an Essbase Request

To specify the member (or shared member) and the ALIAS name in a report, you must create a synonym using the PARMS 'ALIASFIELD' option. The Master File generated using this option will contain an ALIAS field for each field in the generation view.

Syntax: How to Specify ALIAS and Member Names in a Request

```
CREATE SYNONYM app/synonym FOR application.database DBMS ESSBASE AT
connection_name PARMS 'ALIASFIELD'
END
```

where:

connection_name

Is the server name used as a connect descriptor to the Essbase Server across the network.

ALIASFIELD

Is the parameter at the end of the CREATE SYNONYM statement that creates an additional ALIAS_FIELDNAME for each field of the generation view in the Master File.

Example: Generated Master File sample.mas

```
FILENAME=SAMPLE, SUFFIX=ESSBASE, $
SEGMENT=BASIC, SEGTYPE=S0, $
.
.
.
$  DIMENSION: Product
    FIELDNAME=PRODUCT, ALIAS='Lev2,Product', USAGE=A7, ACTUAL=A7,
      WITHIN='*Product', $
    FIELDNAME=FAMILY, ALIAS=Family, USAGE=A4, ACTUAL=A4,
      WITHIN=PRODUCT, $
    FIELDNAME=FAMILY_ALIAS, ALIAS=Family_ALIAS, USAGE=A11, ACTUAL=A11,
      REFERENCE=FAMILY, PROPERTY=CAPTION,  $
    FIELDNAME=SKU, ALIAS=SKU, USAGE=A6, ACTUAL=A6,
      WITHIN=FAMILY, $
    FIELDNAME=SKU_ALIAS, ALIAS=SKU_ALIAS, USAGE=A18, ACTUAL=A18,
      REFERENCE=SKU, PROPERTY=CAPTION,  $
```

Note: The SET USEALIASNAME ON/OFF command is ignored when the Master File is created using this option.

Example: Using ALIAS and Member Names in an Essbase Request

```
TABLE FILE SAMPLE
PRINT SALES PROFIT
BY SKU
BY SKU_ALIAS
WHERE SKU_ALIAS EQ 'Cola'
END
```

The output is:

```
SKU      SKU_ALIAS   Sales      Profit
---      ---------   -------    --------
100-10   Cola        62,824.00  22,777.00
```

Adapter for IMS

In this section:

Using an IMS Secondary Index

Using an IMS Secondary Index on a Child Segment

How to:

Select a PSB

Use an IMS Secondary Index

Example:

Sample Access File for DI21PART

Using an IMS Secondary Index on a Child Segment

The Adapter for IMS supports:

- Partitioned databases, including HDAM.
- Concatenation information in an Access File instead of in a FOCPSB.
- Secondary indexes.

Syntax: How to Select a PSB

You have two options for selecting a PSB within the session:

- You can issue the IMS SET PSB command in your server profile, or in a stored procedure.
- You can use an Access File to identify the PSB. Each Access File corresponds to one Master File; it identifies the PSB associated with its corresponding Master File.

If you use an Access File, the adapter identifies the appropriate PSB when you reference a Master File in a request. The selection is automatic and transparent to you. Each Access File will contain six or more attributes.

```
PSB=psbname,PCBNUMBER= pcb_number,PL1=(NO | YES),WRITE=(YES | NO),$
SEGNAME=segment_name, KEYTYPE=segtype (S0|(S or S1)|S2|(SH or SH1)|SH2),$
ALTPCBNAME=index name  , ALTPCBNUMBER=index PCB number,$
```

where:

psbname

Is the actual name of the Access File member to use. The Access File will contain the name of the actual PSB that IMS will access. If the member does not exist, the following message is (generated) displayed:

```
(EDA4261) PSB MEMBER NOT FOUND: psbname
```

pcb_number

The position within the PSB that points to the database to be processed.

PL1

Indicates whether the PSB was generated with LANG=(PL/I, COBOL or Assembler). YES indicates PL/I. NO indicates COBOL or Assembler.

WRITE

YES - allows SQL update for this database.

NO - does not allow SQL update for this database and is the default.

segname_name

Is / Are the segment name(s) defined in the database definition.

segtype

Identifies the characteristics of the segment's key field. See *SEGTYPE in IMS* on page 12-24.

index name (Optional)

Identifies a secondary index database defined by the 'Procseq=' option within the PSB.

index PCB number (Optional)

Identifies the PCB number of the indexed database.

The member name of an Access File must be the same as the member name of the corresponding Master File.

Note:

All participating files in a join must use the same PSB. Any attempt to join files that require different PSBs generates the following message:

```
(EDA4295) ACCESS POINTS TO DIFFERENT PSBS IN JOIN
```

Example: Sample Access File for DI21PART

The following is a sample Access File corresponding to the DI21PART Master File.

```
PSB=DI21PSB, WRITE=NO PCBNUMBER=2, PL1=NO,,$
SEGNAME=PARTROOT,  KEYTYPE=S2,$
SEGNAME=STANINFO,  KEYTYPE=S2,$
SEGNAME=STOKCOUNT, KEYTYPE=S2,$
SEGNAME=CYCCOUNT,  KEYTYPE=S2,$
SEGNAME=BAKORDR,   KEYTYPE=S2,$
```

Using an IMS Secondary Index

If you want to access a segment through a field in the root segment that is not its sequence field (primary key), IMS provides the option of creating a secondary index on the field. In some situations, using a secondary index improves performance. The secondary index is itself a separate data source. Each of its records contains a value of the field to be indexed and a pointer to the target segment of the data source record containing that value.

When using a secondary index, IMS locates a record by first reading the *index* data source to retrieve the appropriate pointer and then using the pointer to read the *data* data source.

If a PCB includes the parameter

```
PROCSEQ=indexDBDname
```

the named index is used as the main entry point into the data source.

One Master File and Access File can describe all primary and secondary indexes for a data source. Then, given a request, the adapter can examine all record selection tests to determine the best access path into the data source. The adapter can take advantage of this Auto Index Selection feature if:

- The PSB includes a PCB for each index you may need to access. Each such index PCB must contain a

  ```
  PROCSEQ=indexDBDname
  ```

  parameter that identifies the index DBD.
- The index targets the root segment in the Master File.

In the Master File, prior to the secondary index definitions, you must describe the entire root segment of the data source. Every field listed in the DBD is an IMS sequence field or search field, and each secondary index is based on one or more of these fields. You must assign each secondary index field its appropriate alias.

Note: IMS allows for system-defined sub-sequence fields to make an index unique. The Master File can completely ignore the presence and length of such fields.

Syntax: How to Use an IMS Secondary Index

For each secondary index, in the Master File you must:

1. Describe the secondary index as a group field at the end of the root segment. In the group definition, use the index name (provided by the XDFLD NAME parameter in the DBD) as the alias name, and append the suffix SKY to it.

   ```
   GROUP=anyname, ALIAS=XDFLDname.SKY
   ```

   where:

   anyname

   Is the field name for the group, unique within the Master File.

   XDFLD*name*

   Is the name assigned to the index by the XDFLD record in the DBD.

   For example, consider the following portion of the DBD for the PATDB01 data source:

   ```
     .
     .
     .
   FIELD NAME=LNAME,BYTES=12,START=56,TYPE=C
   FIELD NAME=FNAME,BYTES=12,START=68,TYPE=C
     .
     .
     .
   LCHILD NAME=(SEGIX1,PATDBIX1),PTR=INDX
   XDFLD  NAME=IXNAME,SRCH=(LNAME,FNAME),X
              SUBSEQ=/SX1,NULLVAL=BLANK
   ```

   In the example, the fields that comprise the secondary index are LNAME, FNAME, and an additional sub-sequence system field that makes the index unique and that the Master File can ignore. The GROUP definition for the index in the Master File follows:

   ```
   GROUP=NAMEIX,    ALIAS=IXNAME.SKY,    USAGE=A24,    ACTUAL=A24,$
   ```

   The ALIAS is the index name from the DBD (XDFLD NAME=IXNAME) with the suffix SKY appended. Note that the index definition completely ignores the sub-sequence field.

2. Describe the indexed fields as subordinate fields of the group. The XDFLD SRCH parameter in the DBD lists the names of the fields that participate in the index. You already described these fields once in the Master File as sequence or search fields.

   Assign each subordinate field a new field name not previously used in the Master File. Give each subordinate field an alias value identical to the field name you assigned it when you previously described it as a sequence or search field.

   ```
   FIELDNAME=fieldname, ALIAS=alias
        .
        .
        .
   GROUP= ...
   FIELD[NAME]=newname, ALIAS=fieldname
   ```

   where:

   fieldname

   Is the field name previously assigned to this field.

   alias

   Is the IMS field name from the DBD if the group field is a sequence or search field.

   newname

   Is any name not previously used in the Master File.

   The following portion of the PATINFO Master File illustrates the secondary index definition for the example in Step 1.

   ```
       .
   FIELD=LAST_NAME,    ALIAS=LNAME.IMS    ,USAGE=A12,   ACTUAL=A12,$
   FIELD=FIRST_NAME,   ALIAS=FNAME.IMS    ,USAGE=A12,   ACTUAL=A12,$
       .
       .
       .
   GROUP=NAMEIX,       ALIAS=IXNAME.SKY   ,USAGE=A24,   ACTUAL=A24,$
    FIELD=NAMEL,       ALIAS=             ,USAGE=A12,   ACTUAL=A12,$
    FIELD=NAMEF,       ALIAS=             ,USAGE=A12,   ACTUAL=A12,$
   ```

   The Access File must also reflect the secondary indexes. The IMS PSB includes a PCB for the normal entry point into the data source and an additional PCB for entry through each secondary index. Each PCB for a secondary index includes the parameter

   ```
   PROCSEQ=indexDBDname
   ```

   where:

   *index*DBD*name*

   Is the LCHILD NAME parameter in the data source DBD.

The Access File must have a one-to-one correspondence with the PSB.

Any Access File entry that corresponds to a secondary index PCB must identify the name of the index. This index name is the ALIAS of the GROUP record for the index in the Master File. It is also the value of the XDFLDNAME parameter in the DBD.

The next example illustrates a secondary index PCB and its corresponding Access File entry for the PATDB01 data source.

PCB:

```
PCB TYPE=TP,MODIFY=YES,EXPRESS=YES
PCB TYPE=TP,EXPRESS=NO,MODIFY=YES,SAMETRM=YES
PCB TYPE=DB,DBDNAME=PATDB01,PROCOPT=A,KEYLEN=9
 SENSEG  NAME=PATINFO,PARENT=0
PCB TYPE=DB,DBDNAME=PATDB01,PROCOPT=GO,KEYLEN=24,PROCSEQ= ATDBIX1
 SENSEG  NAME=PATINFO,PARENT=0
PCB TYPE=DB,DBDNAME=PATDB01,PROCOPT=GO,KEYLEN=33,PROCSEQ=
PATDBIX2
 SENSEG  NAME=PATINFO,PARENT=0
PCB TYPE=DB,DBDNAME=PATDB01,PROCOPT=GO,KEYLEN=8,PROCSEQ=
PATDBIX3
 SENSEG  NAME=PATINFO,PARENT=0
PSBGEN LANG=COBOL,PSBNAME=PATDBPSB,CMPAT=YES
 END
```

Access File:

```
PSB=PATDBPSB,PCBNUMBER= 4,PL1=NO,WRITE=NO,$
SEGNAME=PATINFO, KEYTYPE=S2  ,$
ALTPCBNAME=IXNAME  , ALTPCBNUMBER=5,$
ALTPCBNAME=IXCOMP  , ALTPCBNUMBER=6,$
ALTPCBNAME=IXADMD  , ALTPCBNUMBER=7,$
```

When the adapter generates DL/I calls for retrieval, it examines the record selection tests in the request to determine which PCB offers the most efficient access path to the required data.

Note: Since the PSB most likely includes only one PCB for each secondary index, each Master File that accesses the same index PCB must contain the same GROUP ALIAS value for the index.

Using an IMS Secondary Index on a Child Segment

The CREATE SYNONYM command places secondary index information in the Access File. No auxiliary virtual fields are created in the Master File.

Two segments belonging to the same root path might be connected by the secondary indexes:

- The target segment has an associated virtual search field (described in the Access File), which is used in the SSA.
- The source segment has the real base fields that are used to find the target segment instances. One target segment might have many secondary indexes associated with different source segments. The Secondary index is based on one or more (up to 5) base fields.

Each PCB might be associated with only one secondary index (PROCSEQ parameter in the PCB definition). Primary PCB number in the PSB statement is chosen at create synonym time. Sequential numbers of all other PCBs associated with the same DBD are stored in the XDFLD access file statement (parameter ALTPCBNUMBER).

Note: The .sky field suffix definitions are supported to ensure upward compatibility.

Example: Using an IMS Secondary Index on a Child Segment

Master File

```
FILENAME=DIX_DIX1DBD, SUFFIX=IMS      , $
  SEGMENT=PARTROOT, SEGTYPE=S0, $
    FIELDNAME=PARTKEY, ALIAS=PARTKEY.KEY, USAGE=A17, ACTUAL=A17, $
    FIELDNAME=PARTFIL1, ALIAS=PARTFIL1.IMS, USAGE=A8, ACTUAL=A8, $
    FIELDNAME=FILL1, USAGE=A1, ACTUAL=A1, $
    FIELDNAME=PARTNAME, ALIAS=PARTNAME.IMS, USAGE=A23, ACTUAL=A23, $
    FIELDNAME=FILL2, USAGE=A1, ACTUAL=A1, $
  SEGMENT=STOKSTAT, SEGTYPE=S0, PARENT=PARTROOT, $
    FIELDNAME=STOCKEY, ALIAS=STOCKEY.KEY, USAGE=A16, ACTUAL=A16, $
    FIELDNAME=STOKFIL1, ALIAS=STOKFIL1.IMS, USAGE=A4, ACTUAL=A4, $
    FIELDNAME=STOKNUMS, ALIAS=STOKNUMS.IMS, USAGE=A9, ACTUAL=A9, $
    FIELDNAME=STOKFIL2, ALIAS=STOKFIL2.IMS, USAGE=A20, ACTUAL=A20, $
    FIELDNAME=STOKFREQ, ALIAS=STOKFREQ.IMS, USAGE=A6, ACTUAL=A6, $
    FIELDNAME=FILL1, USAGE=A105, ACTUAL=A105, $
  SEGMENT=CYCCOUNT, SEGTYPE=S0, PARENT=STOKSTAT, $
    FIELDNAME=CYCLKEY, ALIAS=CYCLKEY.KEY, USAGE=A2, ACTUAL=A2, $
    GROUP=CYCLNUMB, ALIAS=CYCLNUMB.IMS, USAGE=A8, ACTUAL=A8, $
     FIELDNAME=CNMB1, USAGE=A3, ACTUAL=A3, $
     FIELDNAME=CNMB2, USAGE=A3, ACTUAL=A3, $
     FIELDNAME=CNMB3, USAGE=A2, ACTUAL=A2, $
    FIELDNAME=CYCLFIL1, ALIAS=CYCLFIL1.IMS, USAGE=A4, ACTUAL=A4, $
    FIELDNAME=CYCLVALU, ALIAS=CYCLVALU.IMS, USAGE=A7, ACTUAL=A7, $
    FIELDNAME=FILL1, USAGE=A4, ACTUAL=A4, $
```

Access File

```
PSB=DIX1PSB, WRITE=NO, PCBNUMBER=2, PL1=NO, $
  SEGNAME=PARTROOT, KEYTYPE=S2, $
   XDFLD=PARTNAMX, SRCH=PARTNAME, ALTPCBNUMBER=3, $
   XDFLD=PARTFILX, SRCH=PARTFIL1, ALTPCBNUMBER=4, $
  SEGNAME=STOKSTAT, KEYTYPE=S2, $
   XDFLD=CYCLNUMX, SRCH=CNMB1/CNMB3/CNMB2, BASESEG=CYCCOUNT, ALTPCBNUMBER=5, $
  SEGNAME=CYCCOUNT, KEYTYPE=S2, $
```

Inverted Master File

```
FILENAME=DIX_DIX1DBD, SUFFIX=IMS      , $
  SEGMENT=STOKSTAT, SEGTYPE=S0, $
    FIELDNAME=STOCKEY, ALIAS=STOCKEY.KEY, USAGE=A16, ACTUAL=A16, $
    FIELDNAME=STOKFIL1, ALIAS=STOKFIL1.IMS, USAGE=A4, ACTUAL=A4, $
    FIELDNAME=STOKNUMS, ALIAS=STOKNUMS.IMS, USAGE=A9, ACTUAL=A9, $
    FIELDNAME=STOKFIL2, ALIAS=STOKFIL2.IMS, USAGE=A20, ACTUAL=A20,
    FIELDNAME=STOKFREQ, ALIAS=STOKFREQ.IMS, USAGE=A6, ACTUAL=A6, $
    FIELDNAME=FILL1, USAGE=A105, ACTUAL=A105, $
  SEGMENT=CYCCOUNT, SEGTYPE=S0, PARENT=STOKSTAT, $
    FIELDNAME=CYCLKEY, ALIAS=CYCLKEY.KEY, USAGE=A2, ACTUAL=A2, $
    GROUP=CYCLNUMB, ALIAS=CYCLNUMB.IMS, USAGE=A8, ACTUAL=A8, $
     FIELDNAME=CNMB1, USAGE=A3, ACTUAL=A3, $
     FIELDNAME=CNMB2, USAGE=A3, ACTUAL=A3, $
     FIELDNAME=CNMB3, USAGE=A2, ACTUAL=A2, $
    FIELDNAME=CYCLFIL1, ALIAS=CYCLFIL1.IMS, USAGE=A4, ACTUAL=A4, $
    FIELDNAME=CYCLVALU, ALIAS=CYCLVALU.IMS, USAGE=A7, ACTUAL=A7, $
    FIELDNAME=FILL1, USAGE=A4, ACTUAL=A4, $
  SEGMENT=PARTROOT, SEGTYPE=U, PARENT=STOKSTAT, $
    FIELDNAME=PARTKEY, ALIAS=PARTKEY.KEY, USAGE=A17, ACTUAL=A17, $
    FIELDNAME=PARTFIL1, ALIAS=PARTFIL1.IMS, USAGE=A8, ACTUAL=A8, $
    FIELDNAME=FILL1, USAGE=A1, ACTUAL=A1,
    FIELDNAME=PARTNAME, ALIAS=PARTNAME.IMS, USAGE=A23, ACTUAL=A23, $
    FIELDNAME=FILL2, USAGE=A1, ACTUAL=A1, $
```

Access File

```
PSB=DIX1PSB, WRITE=NO, PCBNUMBER=5, PL1=NO, $
  SEGNAME=STOKSTAT, KEYTYPE=S2, $
   XDFLD=CYCLNUMX, SRCH=CNMB1/CNMB3/CNMB2, BASESEG=CYCCOUNT, ALTPCBNUMBER=5, $
  SEGNAME=CYCCOUNT, KEYTYPE=S2, $
  SEGNAME=PARTROOT, KEYTYPE=S2, $
   XDFLD=PARTNAMX, SRCH=PARTNAME, ALTPCBNUMBER=3, $
   XDFLD=PARTFILX, SRCH=PARTFIL1, ALTPCBNUMBER=4, $
```

This example contains three secondary indexes:

- **PARTNAMX** is the secondary index used to find segment PARTROOT using the value of the PARTNAME field. Target and source segments are the same: PARTROOT.
- **PARTFILX** is the secondary index used to find segment PARTROOT using the value of the PARTFIL1 field. Target and source segments are the same: PARTROOT.
- **CYCLNUMX** is the secondary index used to find segment STOKSTAT using the values of the CNMB1,CNMB3 and CNMB2 fields. The target segment is STOKSTAT; the source segment is CYCCOUNT.

Definition description:

1. Secondary index description associated with the target segment.
2. XDFLD parameter defines the secondary index name used to build SSA.
3. BASESEG parameter defines the source segment name (if it is not the target segment).
4. SRCH parameter defines the names of one or more (up to 5) base fields and their order in the secondary index.

Note: A qualified SSA is built for the target segment if at least one eligible screening condition is provided for the associated primary key, search field, or secondary key base source field.

Adapter for IMS Transactions

The Adapter for IMS Transactions processes input parameters, creates and sends requests to the IMS Transaction Server, and creates an answer set based on the received response. The adapter can be used for WebFOCUS reporting and SQL access to CICS programs, and as a source for DataMitgrator flow processing. It supports:

- Two-phase commit, which enables the adapter to participate in an XA-compliant global transaction. For information about XA compliance, see *XA Support* on page 12-41.
- Web Console synonym creation based on a COBOL File Definition (FD).
- Transactional access as a FOCUS procedure.

Adapter for Informix

The Adapter for Informix supports the selection of multiple databases when creating synonyms from the Web Console. For details about creating synonyms from the Web Console, see *Web Console Enhancements for Adapters* on page 12-48.

Adapter for Ingres

The Adapter for Ingres supports Ingres Release 2.6.

Adapter for JDBC (Generic)

The Adapter for JDBC supports:

- Read/Write capabilities.
- Web Console synonym creation.

Note: The Adapter for JDBC is tested to work with the Transoft JDBC Driver for C-ISAM, Unidata, and Cloudscape, but should also work with any JDBC-compliant driver.

Adapters for J.D. Edwards World and One World

The Adapters for J.D. Edwards World and One World are available through the Web Console, where you can create synonyms and convert metadata.

Note: You do not need to run AUTOSQL and JDECONV from an OS/400 emulation screen because the adapter functions are available through the same console environment.

Adapter for Microsoft SQL Server

The Adapter for Microsoft SQL Server accesses data on all UNIX platforms, with the Microsoft JDBC Driver. This adapter supports:

- Read/Write capabilities.
- Server variable &MSSMSGTXT, which indicates any application error that is issued by a stored procedure.
- Web Console synonym creation, including the ability to select from multiple databases when creating synonyms from the Web Console. For details about creating synonyms from the Web Console, see *Web Console Enhancements for Adapters* on page 12-48.
- Stored procedures with input, output, and inout parameters. For details, see *Stored Procedures in Relational Adapters* on page 12-54.

Adapter for Oracle

The Adapter for Oracle supports the Oracle 10g release.

The adapter supports aggregate awareness. For details about this optimization feature, see *Aggregate Awareness in RDBMSs* on page 12-43.

Adapter for Oracle E-Business Suite

The Adapter for Oracle E-Business Suite is a read-only adapter providing security integration for reporting against Oracle E-Business Suite databases. This adapter supports user authentication and data access rules that are defined at the metadata and data access layer. Specific integrated data security is available for:

- Table and View Restrictions by Responsibility ID
- View Security by Set of Books ID
- View Security by Operating Unit

Using this adapter, you can access data with the following security models:

- Oracle Applications Security
- Union of Responsibilities Security
- Total Access Security

Adapter for PeopleSoft

In this section:

Updating the Workspace Service Profile

How to:

Add PSLOGIN to the Workspace Service Profile

The Adapter for PeopleSoft is enhanced for performance and manageability:

- Service profiles support the call to the adapter using PSLOGIN upon agent connection, in addition to the edasprof.prf file.
- Multiple connections to PeopleSoft data sources behave fully independently.

Updating the Workspace Service Profile

In order to support the PeopleSoft integrated security, the adapter must be called during each connection to the server. The easiest way to ensure that the adapter is always called is to add the PSLOGIN procedure as a Service Profile.

Procedure: How to Add PSLOGIN to the Workspace Service Profile

1. Open the Web Console.
2. Select *Workspace >> Configure*.

   The Workspace Configuration options window opens.
3. Locate and select the Service link at the top of the page. The Service configuration options appear.
4. Locate the Service profile input option and add *PSLOGIN*.
5. Click *Save*.

   You will be prompted to restart the Workspace.
6. Click *OK*.

Adapter for Progress

The Adapter for Progress supports Progress Release 10.a.

Adapter for RMS

The Adapter for RMS supports metadata creation for RMS files based on CDD Repositories, using the Web Console synonym creation facility or the CREATE SYNONYM command.

Adapter for SAP BW

In this section:

Support for BEx Structures

Cancelling BW Requests for Results That Exceed 1 Million Tuples

Default Synonym Name for InfoCubes

Controlling Session Parameters From the Web Console

How to:

Include Structures as Dimensions in a Master File

Example:

Representing Structures as Dimensions

Support for BEx Structures

Structures consist of a group of characteristics and/or key figures. They can be saved and reused in other queries. For example, if plan/actual comparisons are being used extensively, it is possible to save a key figure group that consists of 10 key figures arranged for plan/actual comparison. To be able to use the same set of key figures in a different query, instead of selecting 10 key figures individually, adding the structure to the BEx query automatically brings those key figures into the query.

Note that SAP supports a maximum of two structures in a BEx query and only one of the structures can be of type Key Figure.

Syntax: How to Include Structures as Dimensions in a Master File

```
ENGINE BWBAPI SET STRUCTURE_DIMENSIONS {ON|OFF}
```

where:

`ON`

Includes structures as dimensions in a Master File.

`OFF`

Does not include structures as dimensions in a Master File. OFF is the default value.

Tip: This setting is supported from the Web Console. Click *Data Adapters* in the navigation pane, click the name of a configured adapter, and choose *Change Settings* from the menu to open the Change Settings pane, where you can turn STRUCTURE_DIMENSIONS on and off.

Example: Representing Structures as Dimensions

You can represent structures as dimensions or create a cartesian product of the fields in the structures. Consider a BEx query that uses 2 structures:

- One structure is called “Curr. Year vs. Prev. year Cumulated” and it includes two time dimensions: Current Year and Prev.Year.
- The second structure is called “Orders-Sales-Returns” and it includes four key figures: Incoming Orders, Open Orders, Sales Volume, and Returns.

If the STRUCTURE_DIMENSIONS is set to OFF, the created Master File includes 8 fields representing the cartesian product of the two structures. All of these fields are be placed under the MEASURES section of the Master File and treated as separate key figures. The Master File looks something like this:

```
FILENAME=BW31C/Z2STRUCTURES_1KF_ROW_1COL, SUFFIX=BWBAPI   , $
  SEGMENT=Z2STRUCT, SEGTYPE=S0, $
$  -MEASURES-
    FIELDNAME=CURRENT_YEAR_CUMULATED_INCOMING_ORDERS,
ALIAS=3466HXATG6RG1BG9GSTCN65IR3RV6E, USAGE=D18.2, ACTUAL=D8, MISSING=ON,
      TITLE='Current year cumulated Incoming Orders', $
    FIELDNAME=CURRENT_YEAR_CUMULATED_OPEN_ORDERS,
ALIAS=3466HXATG6RG1BG9GSTCN65IR3RV6E, USAGE=D18.2, ACTUAL=D8, MISSING=ON,
      TITLE='Current year cumulated Open orders', $
    FIELDNAME=CURRENT_YEAR_CUMULATED_SALES_VOLUME,
ALIAS=3466HXATG6RG1BG9GSTCN65IR3RV6E, USAGE=D18.2, ACTUAL=D8, MISSING=ON,
      TITLE='Current year cumulated Sales Volume', $
    FIELDNAME=CURRENT_YEAR_CUMULATED_RETURNS,
ALIAS=3466HXATG6RG1BG9GSTCN65IR3RV6E, USAGE=D18.2, ACTUAL=D8, MISSING=ON,
      TITLE='Current year cumulated Returns', $
    FIELDNAME=PREV__YEAR_CUMULATED_INCOMING_ORDERS,
ALIAS=36AWN99ETKI46HMTOGIVHHSOJ3RV6E, USAGE=D18.2, ACTUAL=D8, MISSING=ON,
      TITLE='Prev. year cumulated Incoming Orders', $
    FIELDNAME=PREV__YEAR_CUMULATED_OPEN_ORDERS,
ALIAS=36AWN99ETKI46HMTOGIVHHSOJ3RV6E, USAGE=D18.2, ACTUAL=D8, MISSING=ON,
      TITLE='Prev. year cumulated Open orders', $
    FIELDNAME=PREV__YEAR_CUMULATED_SALES_VOLUME,
ALIAS=36AWN99ETKI46HMTOGIVHHSOJ3RV6E, USAGE=D18.2, ACTUAL=D8, MISSING=ON,
      TITLE='Prev. year cumulated Sales Volume', $
    FIELDNAME=PREV__YEAR_CUMULATED_RETURNS,
ALIAS=36AWN99ETKI46HMTOGIVHHSOJ3RV6E, USAGE=D18.2, ACTUAL=D8, MISSING=ON,
      TITLE='Prev. year cumulated Returns', $
$  DIMENSION 0DISTR_CHAN (Distribution Channel):
$  HIERARCHY  (Distribution Channel):
...
...
```

The following is a sample WebFOCUS request against this Master File:

```
TABLE FILE Z2STRUCTURES_1KF_ROW_1COL
SUM CURRENT_YEAR_CUMULATED_INCOMING_ORDERS
    CURRENT_YEAR_CUMULATED_OPEN_ORDERS
    CURRENT_YEAR_CUMULATED_SALES_VOLUME
    CURRENT_YEAR_CUMULATED_RETURNS
    PREV__YEAR_CUMULATED_INCOMING_ORDERS
    PREV__YEAR_CUMULATED_OPEN_ORDERS
    PREV__YEAR_CUMULATED_SALES_VOLUME
    PREV__YEAR_CUMULATED_RETURNS
BY 0DISTR_CHAN_KEY
END
```

If the STRUCTURE_DIMENSIONS is set to ON, the created Master File includes four key figures placed under the MEASURES section of the Master File and the "Curr. Year vs. prev. year Cumulated" structure are treated as a dimension. The Master File looks something like this:

```
FILENAME=BW31C/Z2STRUCTURES_1KF_ROW_1COL_STON, SUFFIX=BWBAPI   , $
  SEGMENT=Z2STRUCT, SEGTYPE=S0, $
$  -MEASURES-
    FIELDNAME=INCOMING_ORDERS, ALIAS=[3RV6ENA572BRXFKFCO2M2ZUWS],
USAGE=D18.2, ACTUAL=D8, MISSING=ON,
      TITLE='Incoming Orders', $
    FIELDNAME=OPEN_ORDERS, ALIAS=[3RV6ENHTQ0XHG23VII4YD1TMK],
USAGE=D18.2, ACTUAL=D8, MISSING=ON,
      TITLE='Open orders', $
    FIELDNAME=SALES_VOLUME, ALIAS=[3RV6ENPI8ZJ6YONBOC7AN3SCC],
USAGE=D18.2, ACTUAL=D8, MISSING=ON,
      TITLE='Sales Volume', $
    FIELDNAME=RETURNS, ALIAS=[3RV6ENX6RY4WHB6RU69MX5R24], USAGE=D18.2,
ACTUAL=D8, MISSING=ON,
      TITLE='Returns', $
$  DIMENSION 0DISTR_CHAN (Distribution Channel):
$  HIERARCHY  (Distribution Channel):
...
...
$  DIMENSION EAZ5PAJIWG37DI674JZI2C3UB (Curr. year vs. prev. year
(cumulated to last period)):
$  HIERARCHY  (Curr. year vs. prev. year (cumulated to last period)):
    FIELDNAME=CURR__YEAR_VS__PREV__YEAR__CUMULATED_TO_LAST_PERIOD_,
USAGE=A22, ACTUAL=A22, MISSING=ON,
      TITLE='Curr. year vs. prev. year (cumulated to last period)',
      WITHIN='*[EAZ5PAJIWG37DI674JZI2C3UB]', $
$  Cardinality: 2
$  DIMENSION EAZ5PAJIWG37DI674JZI2C3UB, PROPERTIES:
    FIELDNAME=EAZ5PAJIWG37DI674JZI2C3UB_KEY, ALIAS=MEMBER_NAME,
USAGE=A64, ACTUAL=A64, MISSING=ON,
      TITLE='Curr. year vs. prev. year (cumulated to last period) Key', $
```

The following is sample WebFOCUS request against this Master File:

```
TABLE FILE Z2STRUCTURES_1KF_ROW_1COL_STON
PRINT INCOMING_ORDERS
    OPEN_ORDERS
    SALES_VOLUME
    RETURNS
BY CURR__YEAR_VS__PREV__YEAR__CUMULATED_TO_LAST_PERIOD_
END
```

Note: When the STRUCTURE_DIMENSIONS is set to ON, you must use the key figures with the verb PRINT rather than SUM.

Important: If the BEx query includes only two structures and no dimensions as free characteristics or no dimensions in rows and columns, you should set STRUCTURE_DIMENSIONS to ON. If STRUCTURE_DIMENSIONS is set to OFF, the created synonym will have only measures and no dimensions. Any WebFOCUS requests created against such a synonym would produce the following messages:

```
(FOC11205) ERROR IN MASTER FILE DESCRIPTION:
(FOC11229) MDX SEGMENT DESCRIPTION CONTAINS NO HIERARCHIES
```

Cancelling BW Requests for Results That Exceed 1 Million Tuples

For performance reasons, SAP has placed an internal limit on BW requests. In the past, this limit may have caused problems with some WebFOCUS requests. To prevent these problems in WebFOCUS Release 5.3, the request will not be forwarded to SAP BW if it is too large for the SAP BW system to handle. The user is notified with the following message:

```
(FOC11201) VIOLATION OF BW LIMIT. MAXIMUM 1 MILLION TUPLES.
(FOC11201) CELL_DATA TUPLES COUNT: #########
(FOC11201) FS_DATA   TUPLES COUNT: #########
```

where:

`#`

Represents a number.

As SQL returns a subset of two-dimensional data from tables, MDX returns a subset of multi-dimensional data from cubes. Tuples list dimensions and members to identify individual cells, as well as larger sections of cells in the cube. Because each cell is an intersection of all the dimensions of the cube, tuples can uniquely identify every cell in the cube.

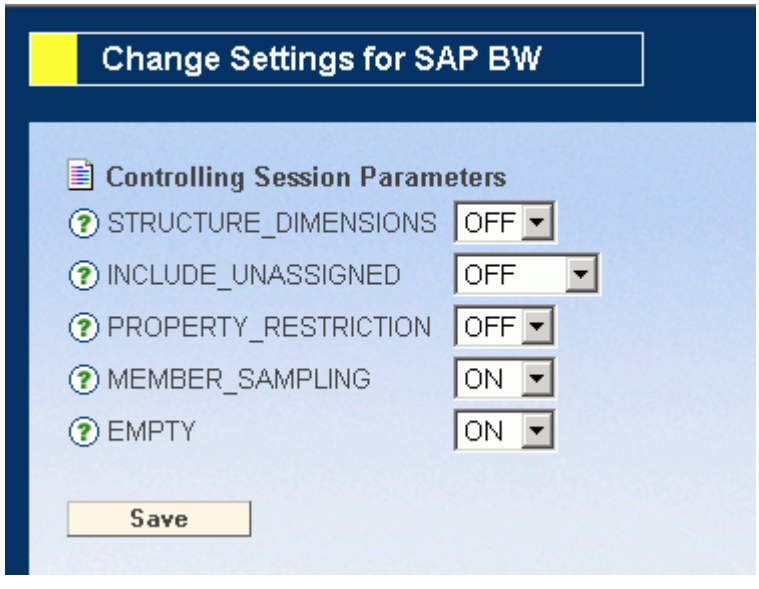
The cell data tuples count is calculated by looking at the number of measures (key figures). A Flattened Set (FS) data tuples count is calculated by using the cardinality of the dimensions included in the request. If the Master File is created with MEMBER_SAMPLING ON, the cardinality information can be found in the Master File.

Default Synonym Name for InfoCubes

A default synonym name is proposed for InfoCubes. Previously, this field was blank for InfoCubes and you had to enter a name manually. Also, once the Master File was created for the InfoCube, you had to manually edit the Access File (acx file) to enclose the CUBENAME value and CATALOG value within single quotation marks. This is no longer required.

Controlling Session Parameters From the Web Console

To change the following settings from the Web Console, click *Data Adapters* in the navigation pane, click the name of a configured adapter, and choose *Change Settings* from the menu. The Change Settings for SAP BW pane opens.



- STRUCTURE_DIMENSIONS determines whether or not structures are included as dimensions in a Master File.
- INCLUDE_UNASSIGNED determines whether or not to include unassigned members belonging to an active hierarchy in a target report.
- PROPERTY_DESCRIPTION determines whether or not to query on attribute values in the MEMBERS row set.
- MEMBER_SAMPLING determines whether or not to generate Master File fields for dimension levels that precisely fit dimension member captions.
- EMPTY whether or not to include empty cells in a report.

Adapter for SAP R/3

In this section:

Controlling Execution and Report Processing Settings From the Web Console

The Adapter for SAP R/3 supports:

- Long logical database names (up to 20 characters).
- Aggregation for Open/SQL.
- Increase in the character length of the development class used for the installation, from 4 to 14 characters. This extends the usability of the installation.
- Foreign Keys (visible using odbcpkey/odbcfkey), which are implemented for the use of all adapters, but only used by R/3.
- Integrated Help for BAPIs.
- Integration between SAP R/3 and DataMigrator using the following features:
  - SAP Direct Input
  - Inbound IDOCs
- Control of execution and report processing settings from the Web Console.
- SAP queries created under the Global area (cross-client), as well as those created under the Standard query area (client-specific).

Controlling Execution and Report Processing Settings From the Web Console

To change the following settings from the Web Console, click *Data Adapters* in the navigation pane, click the name of a configured adapter, and choose *Change Settings* from the menu. The Change Settings for SAP R3 pane opens. You can set:

- Online and Batch execution modes for report processing.
- Dynamic mode (on or off) to support either standard report processing via subroutine-pools or reporting from a Logical Database (LDB) in Native Mode. With the latter setting you can catalog the report and set attributes to the desired LDB before the report is executed.

Adapter for Sybase ASE

The Adapter for Sybase ASE supports the selection of multiple databases when creating synonyms from the Web Console. For details about creating synonyms from the Web Console, see *Web Console Enhancements for Adapters* on page 12-48.

Adapter for Sybase IQ

The Adapter for Sybase IQ supports Sybase IQ Release 12.5 on Solaris 9 (64 bit) and on AIX 5.2.

Adapter for System 2000

The Adapter for System 2000 is supported on UNIX System Services.

Adapter for Tamino

The Adapter for Tamino allows Tamino client applications to access Tamino providers. The adapter converts:

- Internal data manipulation language (DML) requests or SQL requests into Tamino requests.
- Tamino responses into answer sets.

Adapter for Teradata

The Adapter for Teradata supports Teradata macros, only with an ODBC interface.

This adapter supports aggregate awareness. For details about this optimization feature, see *Aggregate Awareness in RDBMSs* on page 12-43.

Adapter for TOTAL

The Adapter for TOTAL is supported on UNIX System Services.

Adapter for VSAM

In this section:

Preparing the Environment for VSAM CICS

Configuring the Adapter for VSAM CICS

Declaring Connection Attributes for VSAM CICS Manually

Logging VSAM CICS Processing

The Adapter for VSAM supports:

- Read/Write access to CICS-controlled VSAM.
- Two-phase commit. For information about XA compliance, see *XA Support* on page 12-41.

The Adapter for VSAM can access and change CICS-owned VSAM files if the Full-Function Server (FFS) is running on OS/390 or z/OS in the same LPAR as the target CICS region. The adapter, running outside CICS, employs EXCI to communicate with the remote component, the long running CICS transaction.

Separate steps are required to prepare the VSAM CICS environment and configure the Adapter for VSAM CICS.

Preparing the Environment for VSAM CICS

Example:

Sample CICS Installation

Reference:

VSAM CICS Components

The server starts a special process, CSCOM3, to control communications with all target CICS regions. This process can be stopped and started from the adapter's Web Console page.

One CSCOM3 process handles all configured EXCI communications to CICS regions. CSCOM3 sends the command to XMITRUE to initialize global storage for the server.

Note:

- CSCOM3 must be running prior to the execution of any request against VSAM CICS. CSCOM3 maintains open EXCI pipes to CICS regions until it is stopped. Having an open pipe may prevent CICS from being recycled.
- When CICS is being recycled, the CSCOM3 service must be stopped. In the event that CICS is forced to shutdown, CSCOM3 must also be stopped, and restarted when CICS is available for use. When CSCOM3 is stopped, it sends a request to XMITRUE to release all global storage. This may have an adverse affect on in-flight requests.

Reference: VSAM CICS Components

One transaction and three programs must be defined in CICS:

- **XMIV.** Is a transaction pointing to the program XMI.
- **XMI.** Is the main program. It is responsible for all physical data I/O.
- **XMITRUE.** Is a dual purpose program. When called by CSCOM3, it sets up global storage areas in CICS for each server odin node combination.
- **XMIABEND.** Is an error handling program. It gets control when XMI or XMITRUE abends. It is responsible for capturing trace and log information, as well as global storage cleanup.

Example: Sample CICS Installation

```
//jobname JOB (accid),'CICS 3.3.0 INSTALL'
//     MSGCLASS=X,MSGLEVEL=(1,1),NOTIFY=userid,
//  PERFORM=3
//*
//DBCRDO   EXEC PGM=DFHCSDUP,REGION=256M
//STEPLIB  DD DSN=CICSTS.V1R3M0.SDFHLOAD,DISP=SHR
//DFHCSD2  DD DSN=userid.CICS410.DFHCSD,DISP=SHR
//DFHCSD   DD DSN=userid.CICSTS13.DFHCSD,DISP=SHR
//SYSPRINT DD  SYSOUT=*
//SYSUDUMP DD  SYSOUT=*
//SYSIN    DD  *

  DEFINE PROGRAM(XMI) GROUP(XMI)
  DESCRIPTION(XMI MAIN MODULE)
         LANGUAGE(C) RELOAD(NO) RESIDENT(NO) USAGE(NORMAL) USELPACOPY(NO)
         STATUS(ENABLED) CEDF(YES) DATALOCATION(ANY) EXECKEY(CICS)
         EXECUTIONSET(FULLAPI)

  DEFINE PROGRAM(XMIABEND) GROUP(XMI)
  DESCRIPTION(XMI ABEND MODULE)
         LANGUAGE(C) RELOAD(NO) RESIDENT(NO) USAGE(NORMAL) USELPACOPY(NO)
         STATUS(ENABLED) CEDF(YES) DATALOCATION(ANY) EXECKEY(USER)
         EXECUTIONSET(FULLAPI)

  DEFINE PROGRAM(XMITRUE) GROUP(XMI)
  DESCRIPTION(XMITRUE GLOBAL STORAGE ANCHOR)
         LANGUAGE(C) RELOAD(NO) RESIDENT(NO) USAGE(NORMAL) USELPACOPY(NO)
         STATUS(ENABLED) CEDF(YES) DATALOCATION(ANY) EXECKEY(CICS)
         EXECUTIONSET(FULLAPI)

  DEFINE TRANSACTION(XMIV) GROUP(XMI)
  DESCRIPTION(XMI MAIN TRANSACTION)
         PROGRAM(XMI) TWASIZE(0) PROFILE(DFHCICST) STATUS(ENABLED
         TASKDATALOC(ANY) TASKDATAKEY(USER) STORAGECLEAR(NO)
         RUNAWAY(SYSTEM) SHUTDOWN(DISABLED) ISOLATE(YES) DYNAMIC(NO)
         PRIORITY(1) TRANCLASS(DFHTCL00) DTIMOUT(NO) INDOUBT(BACKOUT
         RESTART(NO) SPURGE(NO) TPURGE(NO) DUMP(NO) TRACE(YES)
         CONFDATA(NO) RESSEC(NO) CMDSEC(NO)
/*
//
```

Configuring the Adapter for VSAM CICS

Configuring the adapter consists of specifying connection and authentication information for each of the connections you want to establish. You can configure the Adapter for Adabas manually or from the Web Console.

Procedure: How to Declare Connection Attributes for VSAM CICS From the Web Console

To configure the adapter for VSAM CICS from the Web Console,

1. Start the Web Console and select *Data Adapters* from the left pane.
2. Expand the Add folder, expand the Other DBMS group folder, then expand the VSAM CICS folder and click a connection. The Add VSAM CICS to Configuration pane opens.
3. Enter the following parameters:

Connection name	Logical name used to identify a specific set of connection attributes.
Proxy	Name of the supplied proxy (or user written) program that converts the Full Function Server calling syntax to the syntax that is valid for the CICS program to be executed. **Note:** This parameter is optional and should only be used at the direction of local support personnel. Leave the field blank for normal operation.
Mirror	IBM-supplied mirror transaction CPMI that the adapter calls by default. If this transaction cannot be used, another transaction name can be created to point to the IBM-supplied mirror program DFHMIRS. This alternate mirror transaction name can be supplied in this field.
Partner LU Name (Application ID)	Application ID of the CICS region.
Local LU Name	LU name to be used. This value is taken from an LU entry in the major node. This value is also specified in the CICS connection/sessions definition.
Trace DSN	Trace data set name.
Log DSN	Log data set name.

4. Click *Configure*.

For details about VSAM CICS logs, see *Logging VSAM CICS Processing* on page 12-39.

Declaring Connection Attributes for VSAM CICS Manually

To establish communication between a Full-Function Server and CICS, you can define communication parameters in the ODIN configuration file. The ODIN node is created when you add a new connection for the Adapter the VSAM CICS.

Example: ODIN Configuration File With CICS VSAM Node

```
NODE = VSMCICS
BEGIN
  PROTOCOL = EXCI
  PROXY = XMITRUE
  MIRROR = EXCI
  CLASS = CICSCLIENT
  PARTNER_LU_NAME = EDBGM006
  LOCAL_LU_NAME = T29DPB50
  TRACEDSN = userid.CICSVSAM.TRACE
  LOGDSN = userid.CICSVSAM.LOG
END
```

Logging VSAM CICS Processing

Logging is always on. All log information is sent to the CICS log CSSL. In most cases, this shows up under JES as MSGUSR.

Log information is written to the specified log dataset in addition to the standard CICS log. However, the two logs may not be completely synchronized. Some errors may not permit writing to the specified Log file.

When CSCOM3 receives a STOP request, it transfers all relevant CICS log records to the local HFS cscom3.log file. The CICS Log file is cleared as part of CSCOM3 START request processing.

The client component of the Adapter for VSAM CICS is executed as an agent process under TSCOM3. The server component of the Adapter for VSAM CICS is executed in the CICS region as part of the XMI program associated with the XMIV with transaction. The client component is responsible for the logical processing of the client's request.

The server component executes physical I/O operations with the CICS controlled VSAM data sets. The server component also dynamically defines in the CICS region (if not pre-defined by the user), the dataset whose name is passed to the client.

Client component trace records are stored in the TSCOM3-owned HFS trace file. Server component trace records are forwarded to the transaction-owned Temporary Storage Queue. All records from the queue are sent to the server and appended to the HFS trace file upon completion of the request.

During abend processing, the information stored in the TS-Queue is copied to the specified trace file. The file is then transferred to the server as part of CSCOM3 STOP request processing. Tracing can be turned on and off from the server Web Console.

Communication between the server and CICS is handled by the standard communication layer on the server-side and by the mirror transaction (EXCI) on the CICS side. All information is passed in the COMAREA buffer in packed format.

Example: Defining Trace and Log Files

Both trace and log files must be defined and available to all users prior to server startup.

Define these files as follows:

```
//jobname JOB (accid),'CICS 3.3.0 INSTALL'
//     MSGCLASS=X,MSGLEVEL=(1,1),NOTIFY=userid,
//     REGION=256M
//*

//SYSPRINT DD SYSOUT=*
//SYSIN    DD *

    DEL userid.CICSVSAM.TRACE
    DEL userid.CICSVSAM.LOG

    DEF CL ( NAME( userid.CICSVSAM.TRACE ) -
              VOLUMES(volume) -
              CYLINDERS(1 1) -
              RECSZ(200 200) -
              CISZ(4096) -
              INDEXED  -
              UNIQUE  -

              SHR(2 3))

    DEF CL ( NAME( userid.CICSVSAM.LOG ) -
              VOLUMES(volume)

              RECSZ(200 200) -
              CISZ(4096)
              UNIQUE  -
              KEYS(8 0) -
              SHR(2 3))
/*
//
```

Adapter for Web Services

The Adapter for Web Services allows client applications to access Web Services providers. The adapter converts:

- Internal data manipulation language (DML) requests or SQL requests into Web Services requests.
- Web Services responses into answer sets.

The adapter supports:

- Web Console synonym creation based on WSDL documents.
- HTTP and HTTPS protocols.

Adapter for XML

The Adapter for XML supports the HTTPS protocol.

XA Support

Two-phase commit is supported for additional adapters.

Supported Adapters

Those added in the current release are marked with an asterisk (*).

XA-compliant adapters are:

- DB2 (using CLI interface) on UNIX/Windows/Linux
- DB2 (using CLI Interface with RRS) on OS/390 and z/OS*
- Oracle
- MS SQL Server (using OLE DB interface)
- Informix
- Sybase ASE
- Ingres II*

Non-XA-compliant adapters are:

- Adabas Stored Procedures*
- CICS Transactions*
- IMS Transactions*
- VSAM CICS*

Aggregate Awareness Support

In this section:

Relational Adapters and Aggregated SQL Queries

Aggregate Awareness in RDBMSs

How to:

Set Aggregate Awareness

Reference:

Usage Notes for Aggregate Awareness

Aggregate Awareness substantially improves the efficiency of queries. In order to use this feature successfully, you need an understanding of the principles of relational adapter operation and knowledge of the RDBMS optimizer.

Relational Adapters and Aggregated SQL Queries

Relational adapters construct optimized SQL queries based on a WebFOCUS request and the hierarchical structure of a file. A relational adapter always attempts to construct an SQL query that delegates most of the work (such as record screening, joins and aggregation) to the underlying relational engine. The interface's ability to pass the join and all tests to the RDBMS is a prerequisite to constructing an aggregated SQL query.

If aggregation cannot be passed to the RDBMS, the trace file contains an explanation. Usually, the request or the file hierarchy can be corrected in such a way that aggregation can be passed to the RDBMS.

Aggregate Awareness in RDBMSs

When aggregation is delegated to the RDBMS, the RDBMS can perform additional optimization of the query by using a mechanism commonly called Aggregate Awareness. Aggregate Awareness is implemented in DB2, Teradata, Oracle, and some other RDBMSs.

The implementation is similar in most RDBMSs. Based on most common types of reports performed on a database, the database administrator creates one or more objects (named SUMMARY TABLES in DB2, JOIN INDEXES in Teradata, and MATERIALIZED VIEWS or SNAPSHOTS in Oracle) that are populated with pre-aggregated data. The size of the pre-aggregated object (summary table, join index, or snapshot) is usually much smaller than the combined size of the involved tables. The RDBMS optimizer evaluates the incoming queries and, if possible, reconstructs the incoming query so that the pre-aggregated data is used for forming the answer set. This significantly reduces both CPU time and I/O operations.

The aggregated SQL generated by the relational adapter is fully suitable for an RDBMS optimizer to use pre-aggregated data. However, DB2, Teradata, and Oracle optimizers have specific rules for when to use pre-aggregated data.

Syntax: How to Set Aggregate Awareness

```
SET AGGREGATE_AWARENESS {FRESHONLY|OLD_OK|OFF}
```

where:

`FRESHONLY`

Sets different values for the parameters associated with each RDBMS.

`OLD_OK`

Sets different values for the parameters associated with each RDBMS.

`OFF`

If no option is selected, the behavior of the target RDBMS is determined by the database configuration options.There is no default for this setting.

For details about adapter-specific settings, see *Usage Notes for Aggregate Awareness* on page 12-44.

Reference: Usage Notes for Aggregate Awareness

Adapter-specific parameters for which values are set by the FRESHONLY and OLD_OK settings:

- For DB2, CURRENT REFRESH AGE and CURRENT QUERY OPTIMIZATION.
- For Oracle, QUERY_REWRITE_INTEGRITY and QUERY_REWRITE_ENABLED.

These values can be set in the Server profile or as a part of an RPC using Direct Passthru.

- Teradata handles aggregate awareness internally.

RDBMS manuals should be reviewed for recommendations, but the most common checklist items are:

- Updating statistics on the pre-aggregated object and the master tables: (RUNSTATS in DB2, COLLECT STATISTICS in Teradata, ANALYZE TABLE in Oracle).
- Confirming compatibility of the generated SQL query and the query used for creating the pre-aggregated object. The most common items are compatibility of:
  - Aggregators (columns functions) and aggregation objects (column function arguments)
  - GROUP BY clauses
  - Joins

Cluster Joins

In this section:

Embedded Joins

Embedded Join Master Files

How to:

Define an Equijoin in the Master File

The Cluster Join feature enables you to describe heterogeneous static Joins in Master and Access Files. Different adapter suffixes may be combined in one Master File using the SEGSUF parameter in the SEGMENT statement. Information for all adapters participating in the CLUSTER JOIN is combined in the Access File. A unified set of APIs is used by all CLUSTER JOIN-enabled adapters to gain access to the relevant portion of the Access File.

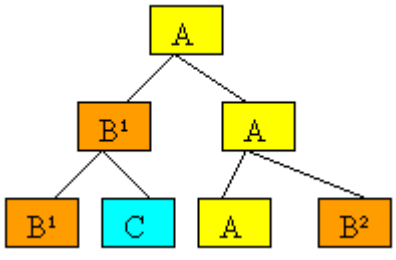
Embedded Joins

An embedded join is an equijoin that you define in a Master File. The name comes from the fact that the join definition is "embedded" in the Master File. (This is also known as a cluster join.)

You can define an embedded join between data sources:

- **Data sources of the same type.** For example, you can define an embedded join between two DB2 tables. This is known as a homogeneous embedded join.
- **Data sources of different types.** For example, you can define an embedded join between three DB2 tables, three CA-IDMS/DB records, and one IMS segment. This is known as a heterogeneous embedded join.

  In the following heterogeneous embedded join, A = a DB2 table, B = a CA-IDMS/DB record, and C = an IMS segment.



  In a Master File, each segment declaration describes one RDBMS table or view, or one record. You can include up to 64 segments in an embedded join.

  The entire join structure described by the Master File is referred to as a *tree*.

  A *subtree* is a segment and any directly related descendant segments of the same data source type. A *root subtree* is the subtree at the top of the tree.

  There are four subtrees here:

  - A-A-A
  - B^1-B^1
  - B^2
  - C

  Note that B^1-B^1 and B^2 are separate subtrees because, even though they are of the same data source type, they are not directly related.

  The root subtree is A-A-A.

Embedded Join Master Files

Each embedded join segment declaration describes one RDBMS table or view, or one non-RDBMS record. You can include up to 64 segments.

If several Master Files (used only with TABLE requests) include the same table, you can avoid repeating the same description multiple times. Describe the table in one of the Master Files, and use the CRFILE attribute in the other Master Files to access the existing description.

Syntax: How to Define an Equijoin in the Master File

An embedded equijoin uses the PARENT segment attribute to identify the relationship between tables and/or records.

```
FILENAME=mtname, SUFFIX=rootsuffix   [,$]
 SEGNAME=table1, SEGTYPE= {S0|KL} [,CRFILE=crfile1] [,$]
  FIELD=name,...,$
  .
  .
  .
 SEGNAME=table2, [SEGSUF=branchsuffix,] SEGTYPE=relationship,
  PARENT=table1 [,CRFILE=crfile2][,$]
   FIELD=name,...,$
  .
  .
  .
```

where:

mtname

Is the one- to eight-character name of the embedded join Master File.

rootsuffix

When the Master File describes:

- A homogeneous embedded join, *rootsuffix* specifies which adapter to use to access the data source.
- A heterogeneous embedded join, *rootsuffix* specifies which adapter to use to access the join's highest-level subtree. That is, it specifies which adapter to use to access the tables or records represented by the root segment and all directly-related descendant segments that are of the same DBMS type.

table1

Is the SEGNAME value for the root table or record in the embedded join. If this segment references a remote segment description, table1 must be identical to the SEGNAME from the Master File that contains the full definition of the remote data source.

name

Is any field name.

table2

Is the SEGNAME value for the related table or record. If this segment references a remote segment description, *table2* must be identical to the SEGNAME from the Master File that contains the full definition of the remote data source.

SEGSUF

Is used in a heterogeneous embedded join to identify the beginning of a new subtree (other than the root subtree), and to specify which adapter to use to access that subtree. A subtree is a segment (representing a table or record) and all directly related descendant segments of the same data source type. You specify SEGSUF in the subtree's highest-level segment.

branchsuffix

Specifies the value of SEGSUF.

relationship

Indicates the type of relationship between the table or record and its parent. Possible values are:

S0 indicates that the related table is in a one-to-many or many-to-many (non-unique) relationship with the table or record named as its parent.

U indicates that the related table or record is in a one-to-one or a many-to-one (unique) relationship with the table or record named as its parent.

KL references a remote segment description. Indicates that the related table or record is in a one-to-many or many-to-many (non-unique) relationship with the table or record named as its parent.

KLU references a remote segment description. Indicates that the related table or record is in a one-to-one or a many-to-one (unique) relationship with the table or record named as its parent.

crfile1

References a remote segment description. Indicates the name of the Master File that contains the full definition of table1.

crfile2

References a remote segment description. Indicates the name of the Master File that contains the full definition of table2.

Web Console Enhancements for Adapters

In this section:

Relational Adapters

Non-Relational Adapters

How to:

Create a Synonym From the Web Console (Relational Adapters)

Change Data Mapping Conversion, Optimization, Session, and Other Settings From the Web Console (Relational Adapters)

Create a Synonym From the Web Console (Non-Relational Adapters)

Set CHECKNAMES and UNIQUENAMES Manually

This topic describes Web Console enhancements for relational and non-relational adapters.

Relational Adapters

For relational adapters, the Web Console supports:

- Overwriting of existing synonyms using the CREATE SYNONYM command. This option generates DROP parameter syntax.
- Dynamic Column option for the CREATE SYNONYM command. This option generates NOCOL syntax.
- Cardinality option in the CREATE SYNONYM command for use with equi-joins. This option enables you to reflect the current cardinality (number of rows or tuples) in the table during metadata creation.
- Synonym creation for the SYNONYM table type (if supported in the RDBMS).
- Ability to change settings for data mapping conversions, as well as optimization, session, and other settings from a single location in the Web Console. Click *Data Adapters* in the navigation pane, click the name of a configured adapter, and choose *Change Settings* from the menu. The Change Settings pane opens. For details, see *How to Change Data Mapping Conversion, Optimization, Session, and Other Settings From the Web Console (Relational Adapters)* on page 12-51.

In addition, the Adapters for Informix, Microsoft SQL Server, and Sybase ASE support selection from multiple databases when creating synonyms from the Web Console.

Procedure: How to Create a Synonym From the Web Console (Relational Adapters)

1. Start the Web Console and, in the navigation pane, click *Metadata*. The Managing Metadata page opens.

   To create a synonym, you must have configured the adapter.

2. Click *New Synonym* in the navigation pane. The Select Adapter and Connection to Create Synonym pane opens.

3. Click a connection for the configured adapter. The right pane displays selection options that are appropriate for each adapter.

   Use Current Database. Select the *Use Current Database* check box to use the database defined for the chosen connection. (Appears only for Informix, Microsoft SQL Server, and Sybase ASE.)

   Select Database. If you wish to use a different database, leave the *Use Current Database* check box blank and choose a database from the drop-down list. (Appears only for Informix, Microsoft SQL Server, and Sybase ASE.)

   Restrict Object Type to. Restrict candidates for synonym creation based on selected object type(s). Note that the object types vary depending on RDBMS support.

   Filter by Name and Owner. Selecting this option adds the Owner and Table Name parameters to the screen:

   - **Owner.** Type a string for filtering the owner IDs, inserting the wildcard character (%) as needed at the beginning and/or end of the string. For example, enter: ABC% to select tables or views whose owner IDs begin with the letters ABC; %ABC to select tables or views whose owner IDs end with the letters ABC; %ABC% to select tables or views whose owner IDs contain the letters ABC at the beginning, middle, or end.
   - **Table Name.** Type a string for filtering the table or view names, inserting the wildcard character (%) as needed at the beginning and/or end of the string. For example, enter: ABC% to select all tables or views whose names begin with the letters ABC; %ABC to select tables or views whose names end with the letters ABC; %ABC% to select tables or views whose names contain the letters ABC at the beginning, middle, or end.

4. Click *Select Candidates*. All tables that meet the specified criteria appear.

5. From the Select Application Directory drop-down list, select a directory. baseapp is the default value.

6. If you have tables with identical table names, assign a prefix or a suffix to distinguish them. For example, if you have identically named human resources and payroll tables, assign the prefix HR to distinguish the synonyms for the human resources tables. Note that the resulting synonym name cannot exceed 64 characters.

   If all tables and views have unique names, leave prefix and suffix fields blank.

7. To specify that this synonym should overwrite any earlier synonym with the same fully qualified name, select the *Overwrite existing synonyms* check box.

8. To reflect the current cardinality (number of rows or tuples) in the table during metadata creation, select the *Cardinality* check box. The use of cardinality is for equi-joins. The order of retrieval is based on the size (cardinality) of the table. Smaller tables are read first.

   Note: If the cardinality of the tables to be used in the application are dynamic, it may not be beneficial to choose this setting.

9. To specify that the Master File created for the synonym should not contain column information, select the *Dynamic columns* check box.

   If this option is selected, column data is retrieved dynamically from the data source at the time of the request.

10. From the SET CONVERSION LONGCHAR drop-down list, select: TEXT, ALPHA, or BLOB. TEXT is the default value.

11. Complete your table or view selection:

    To select all tables or views in the list, select the check box to the left of the *Default Synonym Name* column heading.

    To select specific tables or views, select the corresponding check boxes.

12. The Default Synonym Name column displays the name that will be assigned to the synonym. To assign a different name, replace the displayed value.

13. Click *Create Synonym*.

    Synonyms are created and added under the specified application directory.

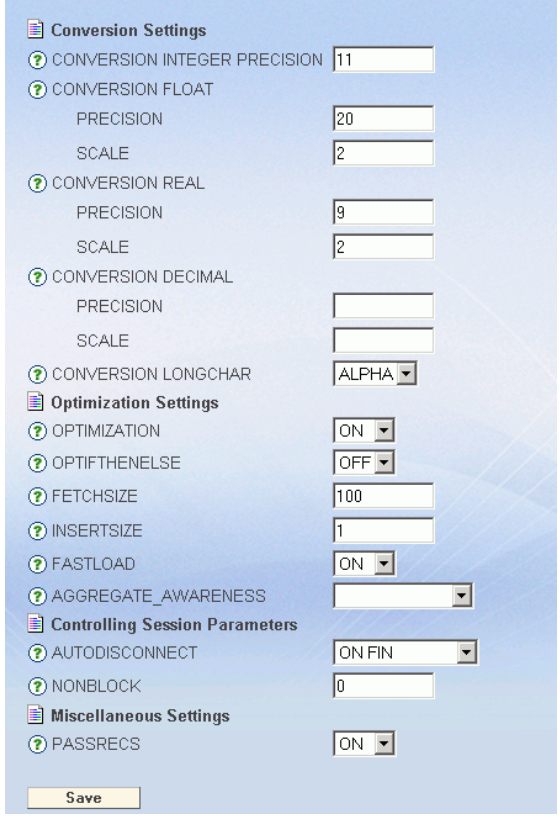
    A status window displays the message:

    ```
    All Synonyms Created Successfully
    ```

14. From the message window, you can click *Go to Metadata page* to view, edit, test, or manage the new synonym.

Procedure: How to Change Data Mapping Conversion, Optimization, Session, and Other Settings From the Web Console (Relational Adapters)

1. Click *Data Adapters* in the navigation pane.
2. Click the name of a configured adapter.
3. Choose *Change Settings* from the menu. The Change Settings pane opens.



Note that the setting for AGGREGATE AWARENESS is new in the software. For the details, including the underlying syntax, see *Aggregate Awareness in RDBMSs* on page 12-43.

Non-Relational Adapters

In non-relational adapters that support synonym creation, the following field name processing options are available on the Web Console: *Validate* and *Make Unique*.

In addition, other features that are common to most non-relational adapters have been standardized in the Web Console. For an illustration, see *How to Create a Synonym From the Web Console (Non-Relational Adapters)* on page 12-52.

Procedure: How to Create a Synonym From the Web Console (Non-Relational Adapters)

Note: The order in which common options appears may vary slightly.

1. Start the Web Console and, in the navigation pane, click *Metadata*. The Managing Metadata page opens.

   To create a synonym, you must have configured the adapter.

2. Click *New Synonym* in the navigation pane. The Select Adapter and Connection to Create Synonym pane opens.

3. Click a connection for the configured adapter. The right pane displays selection options that are appropriate for each non-relational adapter.

4. Complete all required adapter-specific selections. Details are provided in the documentation for each non-relational adapter that generates synonyms from the Web Console.

5. Choose from the common options in steps 6-8, as required, before generating the synonym in step 9.

6. Click the *Validate* check box if you wish to convert all special characters to underscores and perform a name check to prevent the use of reserved names. (This is accomplished by adding numbers to the names.) This parameter ensures that names adhere to iWay specifications. For the syntax associated with this option and the next, see *How to Set CHECKNAMES and UNIQUENAMES Manually* on page 12-53.

   When the Validate option is unchecked, only the following characters are converted to underscores: '-' ; ' ' ; ' \' ; '/' ; ',' ; '$'. No checking is performed for names.

7. Click the *Make unique* check box if you wish to set the scope for field and group names to the entire synonym; this ensures that no duplicate names are used, even in different segments of the synonym. When this option is unchecked, the scope is the segment.

8. Enter the following parameters:

Parameter	Description
Select Application	Select an application directory. baseapp is the default value.
Prefix/Suffix	If you have tables with identical table names, assign a prefix or a suffix to distinguish them. For example, if you have identically named human resources and payroll tables, assign the prefix HR to distinguish the synonyms for the human resources tables. Note that the resulting synonym name cannot exceed 64 characters. If all tables and views have unique names, leave prefix and suffix fields blank.
Overwrite Existing Synonyms	To specify that this synonym should overwrite any earlier synonym with the same fully qualified name, select the *Overwrite existing synonyms* check box.

9. Click *Create Synonym*. The result of the Create Synonym process is a Master File and an Access File, which are created and added under the specified application directory.

10. A status window displays the message:

```
All Synonyms Created Successfully
```

From the message window, you can click *Go to Metadata page* to view, edit, test, or manage the new synonym.

Syntax: How to Set CHECKNAMES and UNIQUENAMES Manually

You can include the following attributes in the CREATE SYNONYM syntax for all non-relational adapters:

`CHECKNAMES`

Converts all special characters to underscores and performs a name check to prevent the use of reserved names. (This is accomplished by adding numbers to the names.) The CHECKNAMES parameter ensures that names adhere to iWay specifications.

When this parameter is omitted (the default), only the following characters are converted to underscore are:'-' ; ' ' ; '\' ; '/' ; ',' ; '$'. No checking is performed for names.

`UNIQUENAMES`

Sets the scope for field and group names to the entire synonym; this ensures that no duplicate names are used, even in different segments of the synonym.

When this option is omitted (the default), the scope is the segment.

General Adapter Features

In this section:

Stored Procedures in Relational Adapters

How to:

Invoke a Stored Procedure

Example:

Invoking a Stored Procedure

Sample Stored Procedure

The features described in this section affect multiple adapters.

Stored Procedures in Relational Adapters

The following adapters support stored procedures with input, output, and in-out parameters:

- DB2
- Microsoft SQL Server

Note: The syntax and examples that follow use DB2 as an illustration.

The output parameter values that are returned by stored procedures are available as result sets. These values form a single-row result set that is transferred to the client after all other result sets are returned by the invoked stored procedure. The names of the output parameters (if available) become the column titles of that result set.

Note that only the output parameters (and the returned value) referenced in the invocation string are returned to the client. As a result, users have full control over which output parameters have their values displayed.

The server supports invocation of stored procedures written according to rules that are specific to each adapter.

For details, see the *iWay Adapter Administration for UNIX, Windows, OpenVMS, OS/400, OS/390, and z/OS* manual.

The server supports invocation of stored procedures written according to rules that are specific to each adapter, as described in the *iWay Adapter Administration for UNIX, Windows, OpenVMS, OS/400, OS/390, and z/OS* manual.

Syntax: How to Invoke a Stored Procedure

```
SQL [DB2] EX procname [parameter_specification1]
[,parameter_specification2]...
END
```

where:

`DB2`

Is the ENGINE suffix.

procname

Is the name of the stored procedure. It is the fully or partially qualified name of the stored procedure in the native RDBMS syntax.

parameter_specification

Input, output, and in-out parameters are supported. Use the variation required by the stored procedure:

input

Is a literal (for example, 125, 3.14, 'abcde'). You can use reserved words as input. Unlike character literals, reserved words are not enclosed in quotation marks (for example, NULL). Input is required.

output

Is represented as a question mark (?). You can control whether output is passed to an application by including or omitting this parameter. If omitted, this entry will be an empty string (containing 0 characters).

in-out

Consists of a question mark (?) for output and a literal for input, separated by a slash (/). (For example: ?/125, ?/3.14, ?/'abcde'.) The out value can be an empty string (containing 0 characters).

Example: Invoking a Stored Procedure

In this example, a user invokes a stored procedure, edaqa.test_proc01, supplies input values for parameters 1, 3, 5, and 7, and requests the returned value of the stored procedure, as well as output values for parameters 2 and 3.

Note that parameters 4 and 6 are omitted; the stored procedure will use their default values, as specified at the time of its creation.

```
SQL DB2 EX edaqa.test_proc01 125,?,?/3.14,,'abc',,'xyz'
END
```

Example: Sample Stored Procedure

This stored procedure uses out and in-out parameters:

```
CREATE PROCEDURE EDAQA.PROCP3 (   OUT chSQLSTATE_OUT   CHAR(5),
                                  OUT intSQLCODE_OUT   INT,
                                  INOUT l_name char(20),
                                  INOUT f_name char(20))
    RESULT SETS 1
    LANGUAGE SQL
-------------------------------------------------------------------------
-- SQL Stored Procedure
-------------------------------------------------------------------------
P1: BEGIN

    -- Declare variable
    DECLARE SQLSTATE CHAR(5) DEFAULT '00000';
    DECLARE SQLCODE INT DEFAULT 0;

    -- Declare cursor
    DECLARE cursor1 CURSOR WITH RETURN FOR

        SELECT
           EDAQA.NF29005.SSN5 AS SSN5,
           EDAQA.NF29005.LAST_NAME5 AS LAST_NAME5,
           EDAQA.NF29005.FIRST_NAME5 AS FIRST_NAME5,
           EDAQA.NF29005.BIRTHDATE5 AS BIRTHDATE5,
           EDAQA.NF29005.SEX5 AS SEX5
        FROM
           EDAQA.NF29005
        WHERE
           (
             ( EDAQA.NF29005.LAST_NAME5 =  l_name )
        AND
             ( EDAQA.NF29005.FIRST_NAME5 = f_name )
           );

     -- Cursor left open for client application
    OPEN cursor1;

    SET chSQLSTATE_OUT = SQLSTATE;
    SET intSQLCODE_OUT = SQLCODE;
    SET l_name = 'this is first name';
    SET f_name = 'this is last name';

END P1   @
```

CHAPTER 13

DataMigrator Enhancements

Topics:

- New Feature Highlights
- Revised Functionality
- Data Management Console
- Data Flow/Process Flow Design Paradigm
- Data Flow Interface
- Process Flow Methodology
- Process Flow Interface
- Integrating DataMigrator Components
- Source Management With Visual SourceSafe

This section describes DataMigrator (formerly ETL Manager) new features in Version 5 Release 3.

For more information about DataMigrator, see the *iWay DataMigrator User's Guide*. For more information about the DataMigrator Server, see the chapter on configuring the DataMigrator Server in the *iWay Server Administration Guide*.

New Feature Highlights

In this section:

Installation and Configuration
Data Management Console
Data Flow Designer
Process Flow Designer
Running Flows
Metadata
Reports

Installation and Configuration

Operating Systems

In addition to Windows 2000 and XP, this release is also certified for Windows 2003 Server.

Client Installation

The complete Data Management Console (client) is installed from a single CD. Previous releases required separate installations of the iWay Client and the Data Management Administration Tools (DMAT).

Database Support

This release adds support for MySQL as both a source and a target.

Data Type Support

This release adds support for TEXT and LONG VARCHAR columns described in a synonym as TX. However, the Sample Data, Test SQL, and Test Transforms facilities of the Data Management Console do not display columns that are described as TX correctly.

Data Management Console

Integration

In addition to the tool for building flows, the new Data Management Console integrates:

- **Client Configuration** - iWay client configuration for available servers can be done from the Data Management Console. Once a server has been configured, it can be used immediately.
- **Adapter Configuration** - The Adapter tab of the navigation pane allows you to add and configure adapters from the Data Management Console.
- **Synonym Creation** - You can create synonyms for any configured adapter by right-clicking an application directory.
- **Synonym Editor** (File Tool) and **Metadata Manager** - The new graphical Synonym Editor allows you to change synonyms in the Data Management Console workspace.
- **Access to the Web Console** - The Web Console can be accessed directly from the Data Management Console.
- **API Test Tool** - The Test Server function supports execution of stored procedures, SQL, or FOCUS commands. When an answer set is returned, it is displayed in a resizable grid in the Data Management Console workspace.

Text View

A new Text View displays the code that is generated for a flow. This view can be printed for documentation purposes.

Connections

The User ID and password used to connect to a server can be saved so that they do not have to be entered every time a user connects. For a Windows server, IWA (Integrated Windows Authentication) can be used so that the current Windows user id is used to connect to the server.

A single connection suffices for any integrated tool.

Navigation Pane

The navigation pane has two tabs, one for procedures and one for metadata. Application directories are displayed in the order that they appear in the application path, instead of alphabetically. The Metadata tab includes synonyms that are available as data sources or data targets. The Procedures tab includes both DM flows and user-written stored procedures.

Flow Options

Descriptive comments can be added to a DM flow.

A flow can be halted after a user-specified number of database errors have occurred.

Stored Procedures

Stored procedures, used to customize flows, have been integrated into the Data Management Console. The Procedures tab shows all stored procedures on the server by application directory. Stored procedures can be edited and run directly from the Data Management Console.

Source Management With Visual SourceSafe

Note: This feature is a **Candidate for Release**.

DataMigrator provides a direct connection to Microsoft Visual SourceSafe that enables you to source manage flows, procedures, and synonyms. This can provide file backup, change tracking, and version control. Visual SourceSafe manages access to source code and documents all code changes.

Data Flow Designer

Data Flow Objects

The new Data Flow designer works from left to right instead of from the top down. Objects have been combined to simplify the data flow:

- **Source Objects** - Source objects can be displayed with the application directory and the synonym's full name.
- **Virtual Columns** - Virtual columns in a synonym are displayed in the Source Transformations window and in the Synonym Editor.
- **Joins** - Join objects can be automatically added to the flow when a second or subsequent source object is added.

  Join columns can be automatically selected, based on matching name and format, when a Join object is added.

  Join objects in the data flow display the join type: Inner, Left Outer, Right Outer or Cross Join.
- **SQL Objects** - The SQL Object includes Manage Columns, Filter, Sort, and SQL Statement options.

  It's no longer necessary to drag a separate SQL object into the workspace to see the generated SELECT statement. The statement is always available from a right-click menu.

  User-entered SQL is automatically drawn in the data flow when possible.

- **Target Objects** - The target object includes target and load options, as well as access to transformation mapping.

  System and DataMigrator variables used in expressions can be tested with the Test Transforms functionality.

  After a flow is run, the Sample Data option allows you to view a portion of the data that has been loaded.

  New target tables can be created in any application directory in the application path, in addition to the baseapp directory.

Adjusting Expressions

The Transformation window provides a option for automatically adjusting transformations to reconcile different format sizes.

Functions

The function listed in the Transformation and SQL Calculators can be displayed by category or alphabetically. Double-clicking a function will add its syntax with sample arguments to an expression. Online help is available for all functions. User written functions with syntax and sample arguments can be added to the calculator's functions tab.

Two-part Name Support

Source and target object labels can include application directories for data flows in the workspace. Using two-part names, synonyms from a specific application directory can be run. When two-part names are not in affect, the synonym from the first application directory in the application path is used, as in previous releases

Process Flow Designer

Process Flow Objects

The new Process Flow designer replaces panels for Dependencies and Procedures. It also allows scheduling requests independently.

Conditional Execution

Execution of objects in a process flow can truly “depend” on the completion of previous objects. The default conditions are for successful or failed execution. Other conditions, like the number of rows process or the number of rows rejected, can also be used.

Grouped Execution

Data flows and procedures can be grouped, causing the process flow to wait for multiple flows/procedures to be completed successfully before proceeding.

E-mail

E-mail messages can be sent at any point in a process flow. For example, one e-mail message could be sent if a flow completes successfully, and a different message sent if it fails.

Two-part Name Support

Stored procedure and flow labels can include application directories for process flows in the workspace. Using two-part names (the default), procedures and flows from a specific application directory can be run. When two-part names are not in affect, the procedure or flow from the first application directory in the application path is used, as in previous releases.

Running Flows

Execution in Progress

Flows that take longer than a few seconds to run will launch the Execution in Progress dialog box where you can cancel the flow or access the Web Console's Agents page to monitor the flow's progress.

User ID

The user id that is used to run flows submitted from the client can be set from the Web Console to either the server administrator id or the user’s id. By default the server administrator id is used. When set to use the user id, the user id of the user that initiated the flow is used. Scheduled flows use the user id that saved the flow.

Metadata

Metadata tab

The Metadata tab allows you to edit synonyms and their access files as text, generate sample data, refresh and delete data, recreate underlying DBMS tables, and assess the impact of changes.

Reports

View Last Log

The log for a flow's last run can be viewed directly from an open flow or by right-clicking a flow on the navigation pane's Procedures tab.

Process Flow Log

The process flow log displays Job IDs for other flows that it runs. This a drill-down report, that is, the Job IDs provide live links that allow you to access details about the components of the process flow. In previous releases, the log for a dependent request appeared in the log for the original request (5.2), or as a separate log (5.1 and earlier).

Statistics Report

- **Failure indication** - The statistics report shows failed and incomplete requests in red for easy identification.
- **Drill Down** - The Statistics report is a drill-down report, which allows you to click entries to display details about the individual flows.
- **New statistics** - The statistics report (and underlying ETLSTATS table) contains two additional columns:

  STAT_DBMSERROR

  Number of rows rejected by the database for a constraint violation, such as a Unique Index constraint, a Not Null constraint, or a user-specified constraint.

  CPU_TIME

  Total CPU time used by the flow in milliseconds.

Impact Analysis Reports on Synonyms, Data Flows and Columns

Impact Analysis Reports on data flows, synonyms, and columns provide information on the flows that are available on a particular server, and the synonyms and columns they use. They allow you to provide a quick analysis of the usage of synonyms and columns by data flows, and allow you to get information for data flows without opening individual flows. There are six types of reports:

- **Synonyms by Data Flow**
- **Data Flows by Synonym**
- **Columns by Data Flow**
- **Data Flows by Column**
- **Synonyms by Data Flow - Enterprise**
- **Data Flows by Synonym - Enterprise**

Revised Functionality

In this section:

FTP

Server Transfer Files

Stored Procedures

Remote Transformations

Setting Default Values for Global Variables

Fusion Targets

Load Options

Metadata Manager

Catalog Administrator

iWay Test Tool

The current release of DataMigrator has a number of functionality changes from previous releases. In addition, a number of ancillary programs are no longer part of the DataMigrator environment. Their functionality has been added to the Data Management Console.

FTP

Use of FTP (File Transfer Protocol) to carry data from a sub-server to a hub-server as part of a data flow has been replaced by use of the iWay Server.

Server Transfer Files

Server Transfer Files, flat files created on a sub-server in a hub-sub environment, are not supported. An iWay DataMigrator Server should be used on the platform where a file is desired.

Stored Procedures

Stored procedures run during a flow to allow manipulation of a file moved with FTP (previously called **Post-extract** and **Pre-load**) are no longer supported. Stored procedures can be run before or after a data flow (previously called **Pre-extract** and **Post-load**).

Remote Transformations

In a hub-sub environment, previous releases of ETL Manager allowed creating extract transformations and specifying that they should be run on a sub-server. If this functionality is required, create a transformation (virtual column) in the synonym on the sub-server.

Setting Default Values for Global Variables

A stored procedure must be used to set a global variable in a filter (where condition). In previous releases, the workbench would prompt for a default value and store it in the request (flow). For details, see *Using Variables in a Data Flow* in Chapter 5, *Designing a Data Flow*.

Fusion Targets

Fusion files are not supported as targets in this release.

Load Options

The load option *Disable automatic pass through (APT)* is not available. If this option is required for testing, include a pre-extract stored procedure in the process flow with the following lines:

```
SQL
SET APT=OFF;
END
-RUN
```

The load option *Continue load processing when an error is encountered* has been replaced. This is now the default behavior. To stop processing after the first error occurs, click the Flow Properties button, go to the Execution page, and select the *Stop processing after _ DBMS errors* check box. Enter 1 in the *DBMS errors* field and click *OK*.

The load option *Oracle Blank Column* is no longer available or required. ORACLE columns described as VARCHAR2 are now fully supported.

Metadata Manager

Table and column impact analysis, features previously available with Metadata Manager, are incorporated into the Data Management Console. Other features of Metadata Manager will be added in a future release.

Catalog Administrator

Catalog Administrator is no longer distributed as part of the Data Management Console. Synonyms should be created and managed from the Web Console.

iWay Test Tool

Functionality provided by the iWay Test tool is now available from the Data Management Console using the Test Server capability.

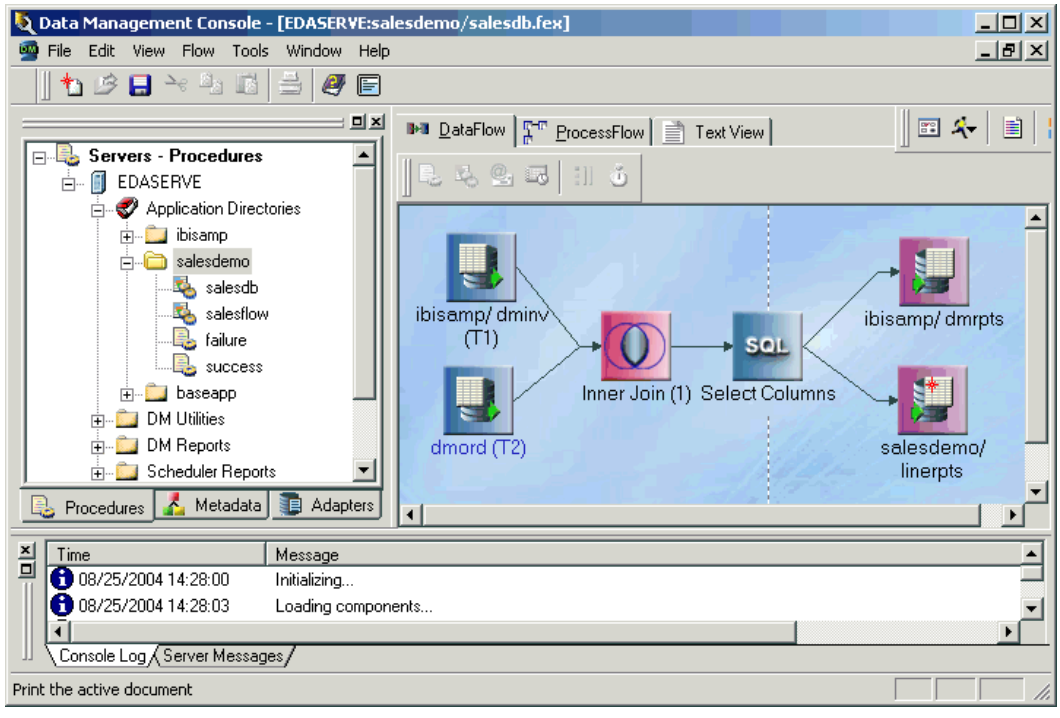
Data Management Console

The DataMigrator Data Management Console is a graphical design interface that runs on Windows 2000, Windows XP, and Windows 2003. You can use the Data Management Console to:

- Design and test data flows and process flows.
- Perform ancillary DataMigrator Server functions, such as scheduling and e-mail notification for processing, data adapter configuration and testing, and metadata management.

  These functions are performed from the Web Console, which you can launch from the Data Management Console.
- View log and report statistics.

The following is the main window of the Data Management Console in Data Flow mode.



It includes the following components:

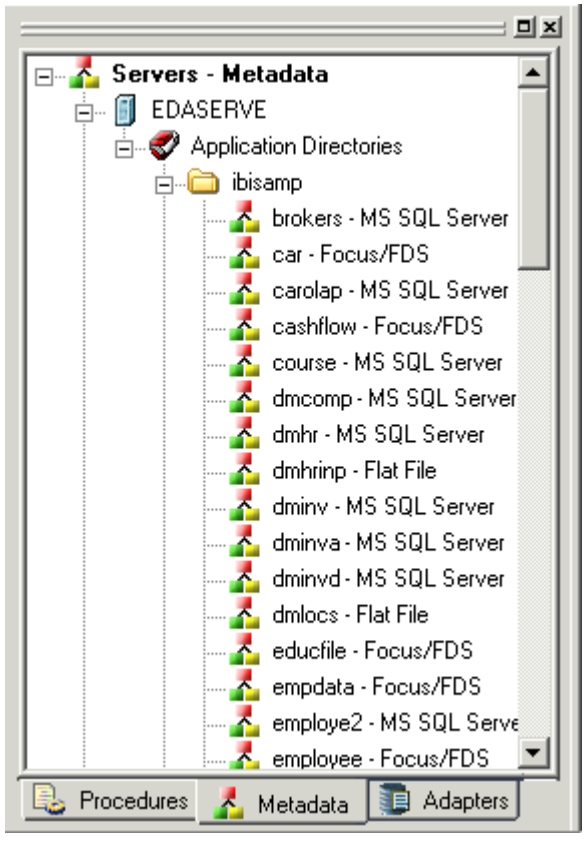
- The **Navigation pane**, on the left, always displays a list of servers that can be accessed by DataMigrator and on which you can store flows. The three tabs below the navigation pane enable you to switch among the Procedures, Metadata, and Adapters tabs.

  When the **Procedures** tab is active, each application directory displays:

  - The files for data flows, process flows, and any supporting stored procedures created for an application.
  - DM and Scheduler Reports folders that contain the reports and logs you can run.

  Note: When you are logged on to an iWay Server, you can view the Application Directories and reports folders in this pane. Until you log onto a server, only the servers appear.

When the **Metadata** tab is active, each application directory displays the synonyms that are available for source and target data in an application's data flows. The synonyms in the following pane describe data for a variety of database systems.



When the **Adapters** tab is active, you can add and configure adapters from the Data Management Console. The Adapters tab is only visible if you select *Enable Adapters management* from the *General* page of the *Tools>Options* menu.

- The **Data Flow workspace**, at the right, where the flow is designed.
- **Toolbars**, which provide icons for the actions most commonly performed from the Data Management Console. Active tools correspond to the task currently being performed. The types of toolbars are:
  - A General toolbar for familiar editing tasks.
  - A Data and Process Flow toolbar for key aspects of the design tasks.
  - A Reporting toolbar for tasks associated with report output.

- The **Message window**, which appears below the workspace and displays application and server messages. The two tabs at the bottom of the window enable you to switch between Application Log messages and Server messages.

Data Flow/Process Flow Design Paradigm

At the core of DataMigrator is the ability to design data flows and process flows. The DataMigrator Data Management Console facilitates the design task using two tabs—Data Flow and Process Flow—and provides a Text View tab from which you can see the code generated by the graphical tools.

- **Data Flow.** Normally, you design a data flow from a set of objects that identify your data source(s), your data target(s), the columns of data to include in the data target(s), and the business rules that govern how the data is extracted from the source(s), transformed, and loaded into the target(s).

  You can join multiple data sources, filter and sort the extracted source data, and specify column mappings from the source to the target.

- **Process Flow.** You structure how the data flow is processed by positioning objects in your workspace and defining their interactions. You can combine:

  - A schedule object that defines when to run the process.
  - Data flow objects that indicate what data to extract and move from data sources to data targets.
  - E-mail objects that notify users about the status of the process at specified points.
  - Stored procedure objects that perform a variety of supplementary tasks before or after the extraction and load steps defined in a data flow.
  - Connector objects, represented as arrows, that specify execution logic for the objects in the process flow (for example, what to do next when a step succeeds or fails).
  - Group objects that specify parallel, rather than sequential, execution of a subset of objects within the total flow. Objects that follow are not executed until processing for the grouped objects is complete.

- **Text View.** This tab enables you to toggle between the graphical interface and the underlying code at any point in your design process.

Note: This modular design methodology is new in DataMigrator Version 5 Release 3. If you are migrating requests that you created in a prior release, they are automatically restructured based on the new Data Flow/Process Flow paradigm.

Data Flow Interface

Example:

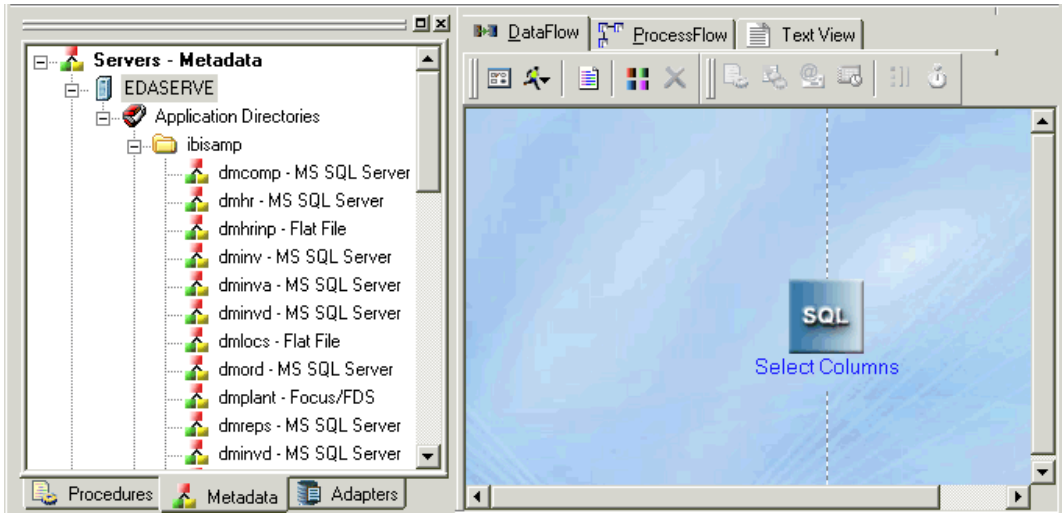
Simple Data Flow at a Glance

Complex Data Flow at a Glance

The Data Flow interface consists of:

- The **Data Flow tab** and workspace, where you build your data flows to extract and move data from data source objects to data target objects. Arrows connect the objects and support the flow.
- The **Data Flow toolbar,** which enables you to set data flow properties, run flows, and arrange flow objects. The same toolbar is active when you create process flows.
- The **Navigation pane**, where you choose and store flow components. It has three tabs:
  - The **Metadata tab** shows synonyms that describe data. You can use them as data sources or data targets in your flow.
  - The **Procedures tab** shows flows and stored procedures . This tab is where data flows and stored procedures are saved. You can use the stored procedures in a data flow, although this tab is primarily used when developing process flows. The Procedures tab also includes reports folders that provides access to log, statistical, and scheduler reports, as well as data flow and synonym reports.
  - The **Adapters tab** allows you to add and configure adapters.

When you create a new flow, the Data Flow tab opens by default, with an SQL object in the workspace to anchor the flow. By default, the Metadata tab in the navigation pane is active and ready for you to add data source objects. You can change this from the Options menu by deselecting the Automatically switch trees check box on the General page. The Flow toolbar is also active.



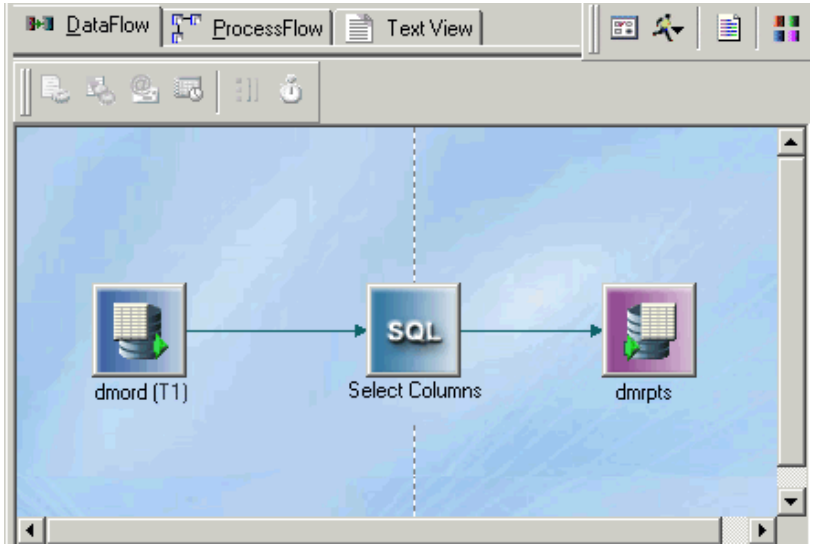
You add data source objects and data target objects, and use the SQL object to establish rules for extracting and moving data between them.

Note: As you build the data flow, you can click the Text View tab at any point to see the underlying code that is generated as you make your additions and selections.

Example: Simple Data Flow at a Glance

You can use DataMigrator to build data flows ranging from the simple, where data is moved from one source into one target, to the complex, which employs multiple sources and targets and a variety of data extraction techniques.

This simple data flow consists of a data source, an SQL object, and a data target.



To create a simple data flow:

1. Open a new flow.

   The Data Flow tab opens by default, with an SQL object in the center of the workspace.
2. To add a data source object, drag a data source object from the Metadata tab of the navigation pane into the workspace to the left of the SQL object.
3. Select the columns that you want to extract from the source and copy into the target.

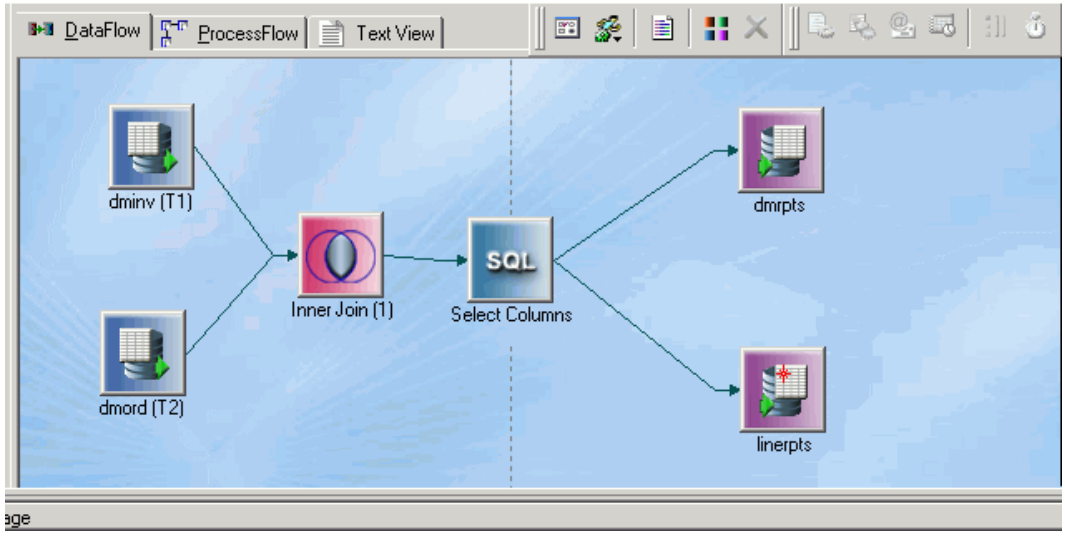
   Note: If *Automatically select all columns* is checked in the Data Flow Designer branch of the User Preferences tree from the Tools>Options menu, you do not need to manually select columns.
4. To add a data target object to the data flow, right-click the workspace to the right of the SQL object and select *Add Target,* then *New*.
5. Save and run the data flow.
6. View the log file for data flow details.

For more information on how to create a data flow of any complexity, see Chapter 5, *Designing a Data Flow*, in the *iWay DataMigrator User's Guide*.

Example: Complex Data Flow at a Glance

You can define a complex data flow that extracts information from multiple data sources and copies it into multiple data targets, using extract transformations, joins, filters, and sorts to refine the results.

This data flow consists of two data sources, an extract transformation, a Join, a filter, a sort, an SQL object, and two data targets.



To create a complex data flow:

1. Open a new flow.

   The Data Flow tab opens by default, with an SQL object in the center of the workspace.

2. To add a data source, drag a data source object from the Metadata tab of the navigation pane into the workspace to the left of the SQL object.

3. Add a second data source to the flow.

   The data sources are connected by a join object, which is linked to the SQL object.

   Note: The default setting of the Data Management Console automatically adds a join object to the workspace. If the Data Management Console is not automatically adding join objects, you can change the setting by checking *Add Join Object if needed* in the Data Flow Designer branch of the User Preferences tree from the Tools>Options menu.

4. Build an expression that creates a new column for extraction in the second data source.

5. Specify join properties.

   An inner join is the default. If you are using the default setting for the Data Management Console, an inner join is created automatically for columns that are identically named and formatted, if one of them is a key column.

   Note: An inner join is created if *Automatically add join conditions* is checked in the Data Flow Designer branch of the User Preferences tree from the Tools>Options menu.

6. Create an expression that filters the data prior to extraction.

7. Select the columns you want to extract from the source and copy into the target.

   Tip: If *Automatically select all columns* is checked in the Data Flow Designer branch of the User Preferences tree from the Tools>Options menu, you do not need to manually select columns.

8. To add two data target objects to the data flow, drag one from the navigation pane and create the other.

9. Map the columns from the joined data sources to the existing data target.

   The columns in the new data target are mapped automatically.

   Tip: If *Automatically map all columns* is checked in the Data Flow Designer branch of the User Preferences tree from the Tools>Options menu, you do not need to map columns manually if the source and target column names are the same.

10. Save and run the data flow.

11. View the log file for data flow details.

For more information on creating this data flow, see Chapter 7, *Tutorial: Creating Data and Process Flows With DataMigrator,* in the *iWay DataMigrator User's Guide*.

Process Flow Methodology

In this section:

Creating a Process Flow With a Data Flow

Creating a Process Flow Without a Data Flow

You can create a process flow either with or without a data flow.

Creating a Process Flow With a Data Flow

Although you can build a simple process flow as an extension to an existing data flow, it is recommended that you create and save each flow and stored procedure separately. With this modular approach, individual flows (both data and process flows) and stored procedures can be executed from more than one process flow, and a process flow can be modified as needed and used to incorporate different data flow and stored procedure objects. A change to a data flow or stored procedure automatically affects all of the process flows that use it.

Note: If you click the Text View tab in a process flow created with this method, any data flows or stored procedures used in the process flow appear as EX procedure_name. If you want to see the underlying code for the individual procedures, you can right-click the object and select View as Text.

However, if you want to add a few process flow objects, such as a schedule or an e-mail, to a data flow, and do not require the advantages of a modular design, save the data flow and click the Process Flow tab, then add the process flow components to the existing data flow.

Note: If you click the Text View tab in a process flow created with this method, the underlying data flow and process flow code appears fully, since it is part of the same procedure.

Creating a Process Flow Without a Data Flow

Normally, process flows manage extraction, transformation, and load processing. However, process flows are not limited to this implementation. Under some circumstances, you may wish to create process flows that do not contain any data flows.

Using the same set of design tools, you can, for example, create a process flow that launches a series of reporting procedures on a defined schedule and then sends e-mail messages to appropriate recipients when the procedures are complete.

Process Flow Interface

Example:

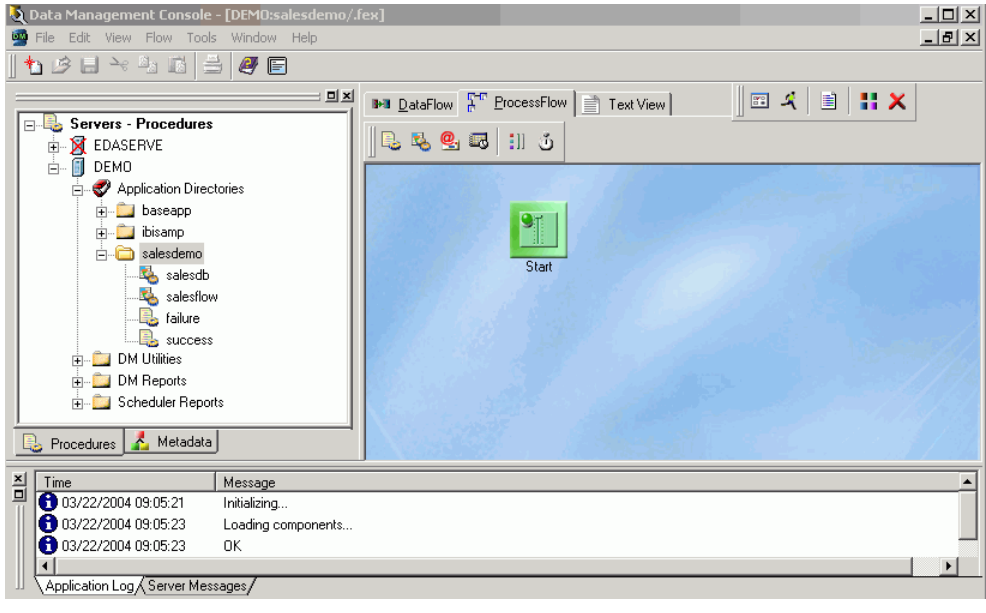
Simple Process Flow At a Glance

Complex Process Flow at a Glance

The Process Flow interface consists of:

- The **Process Flow tab** and workspace, where you build your process flows.
- The **Process Flow toolbar**, above the workspace, which enables you to add objects to your process flow.
- The **Procedures tab** in the navigation pane, where you save all flows and other procedures, and select them for use in your process flows. From this tab, you can also view logs and reports for your flows. (The Metadata tab in the navigation pane is used to develop data flows; it does not directly affect process flow development.)

When you create a new flow and click the Process Flow tab, a Start object appears in the workspace to anchor the flow. The Process Flow icons on the toolbar become active, as does the Procedures tab in the navigation pane.



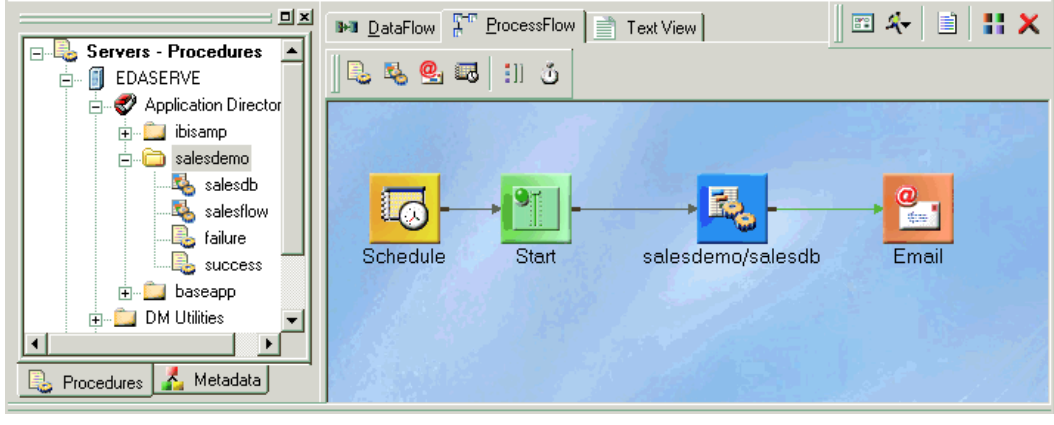
You can add a variety of other objects from the Procedures tab or from the toolbar. These may include a schedule, data flows or other process flows, as single components or as a group, stored procedures, and e-mail messages, in whatever combination and order suits your needs.

Note: As you build the process flow, you can click the Text View tab at any point to see the underlying code that is being generated as you make your selections.

Example: Simple Process Flow At a Glance

You can use DataMigrator to design process flows ranging from simple, where you use only a few process flow components, to complex, where you take advantage of a wide range of components.

In this example, the process flow includes a data flow that is scheduled to run weekly, on Thursdays, starting at midnight. At the end of each run, an e-mail message is sent to a designated recipient to indicate the successful completion of the data flow processing.



To create a simple process flow:

1. Open a new flow and click the *Process Flow* tab.

   The Start object appears by default.

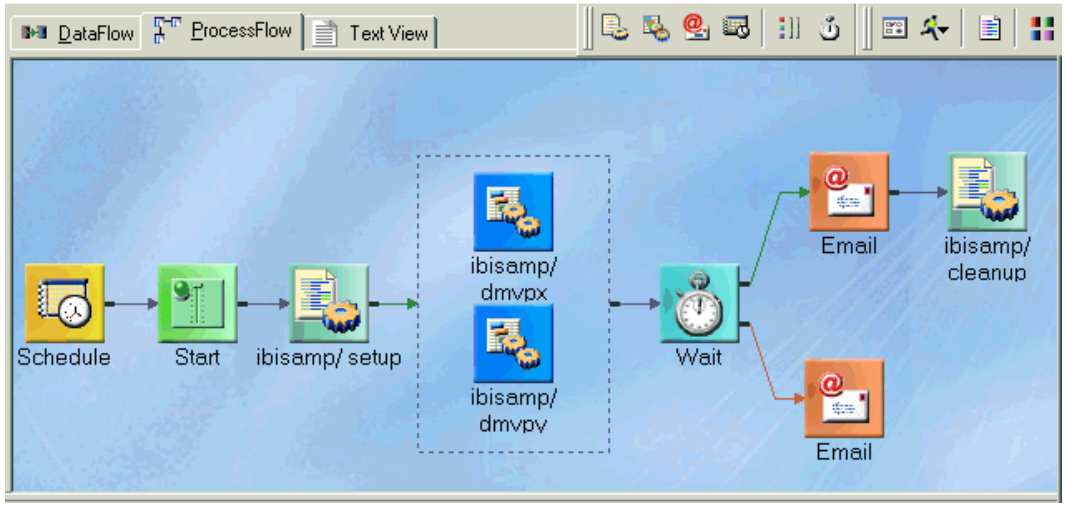
2. To add a data flow object, drag the data flow from the Procedures tab in the navigation pane into the workspace.
3. To add an e-mail object and create a message, ensure that your server is configured for e-mail notification.
4. To add a Schedule object, specify when and how often to run the process flow.
5. Connect the objects.
6. Save and run the process flow.
7. View the log file for flow processing details.

For more information on creating a process flow, see Chapter 6, *Designing a Process Flow*, in the *iWay DataMigrator User's Guide*.

Example: Complex Process Flow at a Glance

You can design a complex process flow by combining a wider range of objects in the workspace. You can run stored procedures before and after executing flows, execute flows concurrently or individually, and send e-mail messages based on the execution's outcome.

In the following process flow, a setup procedure prepares the environment for data extraction. Two data flows are grouped to run simultaneously, followed by a Wait object. When the processing of both data flows is complete, one of two e-mail messages is sent: one if the previous step is successful; the other if the previous step is unsuccessful. After a successful run, a cleanup procedure is executed to prepare for the next scheduled process flow run.



To create a complex process flow:

1. Open a new flow and click the *Process Flow* tab.

   The Start object appears by default.

2. Add a stored procedure to set up the environment prior to data extraction, and connect it to the Start object.

   This procedure runs at the start of the process flow.

3. Add a Parallel Group object for concurrent processing of two data flows, and connect it to the Stored Procedure.

   This enables you to run multiple data flows simultaneously.

4. Add the data flows to the Parallel Group object.

   These data flows run simultaneously.

5. Add a Wait object to ensure that the next step does not begin until all of the data flows in the Parallel group are complete.
6. Connect the Group object to the Wait object.
7. Add another Data Flow object to be executed when the Wait conditions are satisfied.
8. Connect the Data Flow object to the Wait object.
9. Create two e-mail messages and connect both to the Data Flow object, forming two branches in the process flow.
10. Send the messages to appropriate recipients when the data run succeeds or fails.
11. Add a cleanup procedure that runs after the data flows, and connects to the e-mail object upon successful completion the flow.
12. Add a Schedule object and specify when and how often to run the flow.

    The Schedule object is connected to the Start object by default.
13. Save and run the process flow.
14. View the log file for flow processing.

For more information on how to create a process flow, see Chapter 6, *Designing a Data Flow*, in the *iWay DataMigrator User's Guide*.

Integrating DataMigrator Components

How to:

Connect to and Test the Server From the Data Management Console

Launch the Web Console From the Data Management Console

The integration of DataMigrator components is critical to processing your flows effectively. This integration underscores the need to prepare your server environment properly to handle all aspects of a DataMigrator operation.

After you configure your server(s) for local or remote data access and install the Data Management Console, you can define additional server nodes in the client software. The nodes identify the name and port of the DataMigrator Server(s) to which you are connecting. Your entries automatically update the client's odin.cfg file.

After you define the server nodes, you start the Data Management Console and connect to the DataMigrator Server. From the Data Management Console, in addition to designing your flows, you can access the Server Web Console to perform key server administration tasks.

For more information about these tasks, see Chapter 2, *Setting Up DataMigrator*, in the *iWay DataMigrator User's Guide*.

Procedure: How to Connect to and Test the Server From the Data Management Console

Before you proceed, it is recommended to test the connection between the iWay Client software and the DataMigrator Server.

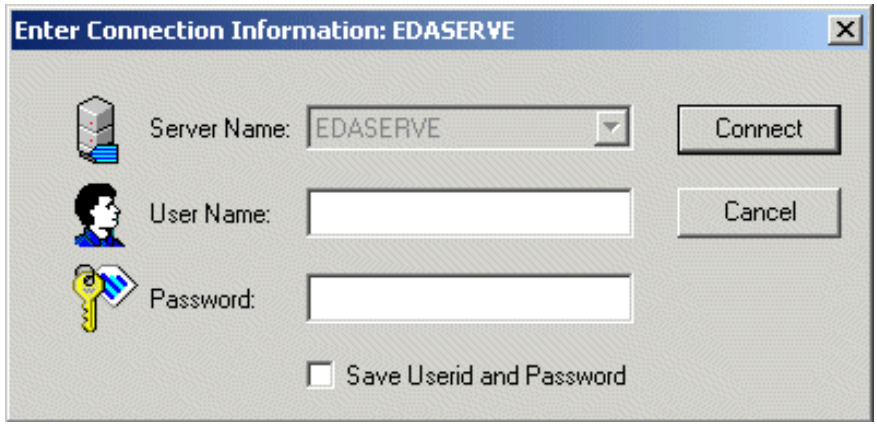
To ensure that the server is running and that you are able to retrieve sample data:

1. From the Windows Start menu, select the *iWay Software>IWAY 53 DM Client* program group (or a different program group name if you supplied one during installation), and then, *Data Management Console*.

   The Data Management Console opens, with the available servers appearing under Procedures in the navigation pane on the left.

2. Right-click on the server you wish to test and select *Connect*.

   The Enter Connection Information dialog box opens:



3. If your server has security enabled, enter your user ID and password in the User Name and Password fields.

   Windows requires that your user name be no longer than 32 characters.

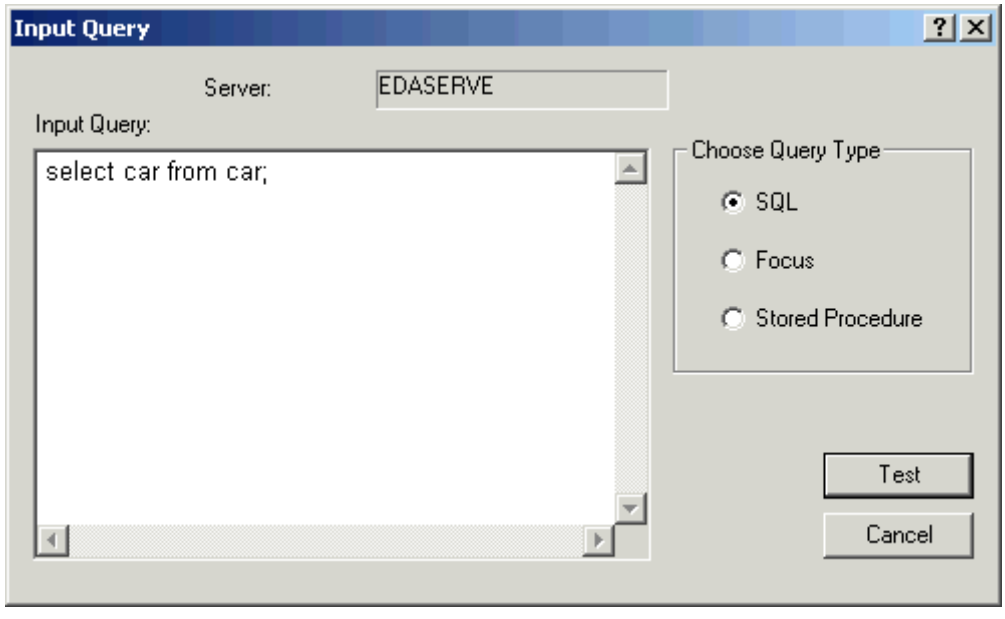
   Note: If you select *Save Userid and Password*, you do not need to reenter these credentials each time you connect, and the dialog box does not appear. However, you must reenter this information when you change your password for the server. To do so, right-click the server name in the navigation tree and select *Properties* to reopen the Remote Server Configuration dialog box.

4. Click *Connect*.

   For data retrieval and processing to occur, you must perform this connection step each time you start the DataMigrator Server and the Data Management Console.

5. Right-click on the server name and select *Test Server*.

   If you can connect to the server, the Input Query dialog box opens. select car from car is the default query.



   You can change the test query, but the default, based on sample data delivered with your software, is sufficient to verify that you can retrieve data.

6. Click *Test*.

   The answer set appears in the right pane of the Data Management Console, behind the Input Query dialog box.

7. Click *Cancel* to close the Input Query dialog box and examine the test output.

	CAR
1	JAGUAR
2	JENSEN
3	TRIUMPH
4	PEUGEOT
5	ALFA ROMEO
6	MASERATI
7	DATSUN
8	TOYOTA
9	AUDI
10	BMW

Procedure: How to Launch the Web Console From the Data Management Console

To facilitate the performance of key server administration tasks, you can access the Web Console directly from the Data Management Console. This procedure assumes that the server has already been started.

1. From the navigation pane, right-click a server name, and select *Access Web Console*.
2. From the secondary menu, select the option that is related to the task you wish to perform:
   - Home (to see all available console options)
   - Agents
   - Scheduler Configuration
   - Procedures
   - Configure Data Adapters
   - Manage Metadata

For more information about these administrative tasks, see the chapter on planning a DataMigrator application in the *iWay DataMigrator User's Guide*.

Source Management With Visual SourceSafe

How to:

Configure Source Control With SourceSafe

Create Projects in Visual SourceSafe

Create or Change Associations Between DataMigrator Application Directories and SourceSafe Projects

Add Files to SourceSafe

Check Out Files From SourceSafe

Check Files Into SourceSafe

Undo a Check Out From SourceSafe

View a File's History, Versions, and Differences

Note: This feature is a **Candidate for Release** and is not fully implemented in the current version of DataMigrator. If you have comments about this feature, contact Information Builder's customer support.

DataMigrator provides a direct connection to Microsoft Visual SourceSafe that enables you to source manage flows, stored procedures, and synonyms. This can provide file backup, change tracking, and version control, as well as allow multiple users to work on the same files without overwriting each other's changes. Visual SourceSafe manages access to the source code and documents all code changes. Visual SourceSafe maintains a separate version of your file each time it is checked in.

DataMigrator provides access to basic source management functions through right-click menu options in the navigation pane which will only appear if you have a SourceSafe client installed.

Before you can use SourceSafe to manage your DataMigrator files, you must:

1. Configure source control by selecting a SourceSafe database.
2. Create a project in SourceSafe.
3. Create associations between your DataMigrator application directories and your SourceSafe project.

You can then add file to your SourceSafe system, check them in or out, and see file history, versions and differences from the Data Management Console.

For detailed information on installing and configuring Visual SourceSafe, and setting up SourceSafe databases, see your Microsoft Visual SourceSafe documentation.

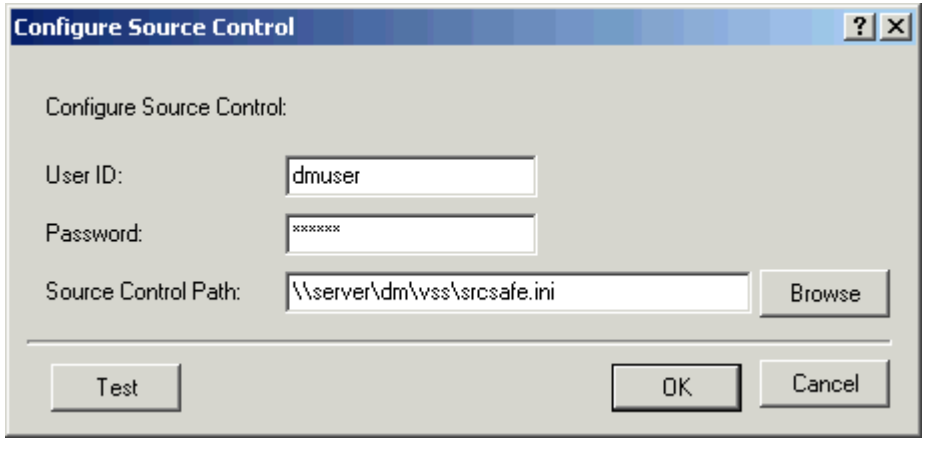
Procedure: How to Configure Source Control With SourceSafe

To use SourceSafe to source manage your DataMigrator flows, stored procedures, and synonyms, you must have a SourceSafe client installed and access to a SourceSafe database.

In the Data Management Console:

1. From the *Tools* menu, select *Create Source Control Configuration*.

   The Configure Source Control dialog box opens.



2. Enter your User ID, Password and the Path to the srcsafe.ini file for your SourceSafe database.
3. Optionally, click the *Test* button to determine if you can connect to the VSS database.
4. Click *OK*.

The following message appears in the Console Log message window:

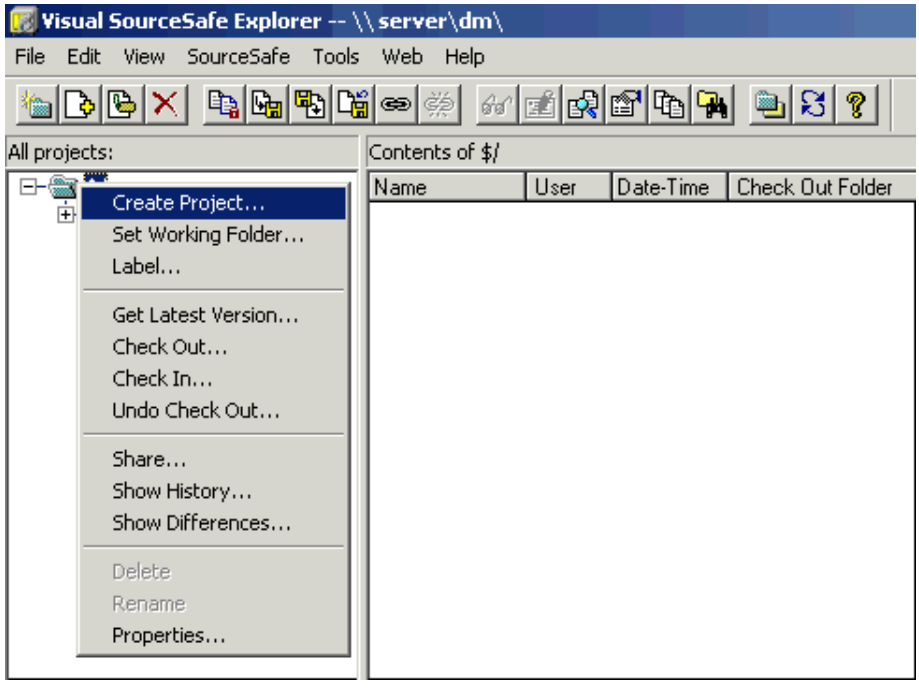
```
Successfully connected to VSS database
```

Tip: For convenience, it is recommended that you use the same User ID and Password for both DataMigrator and SourceSafe.

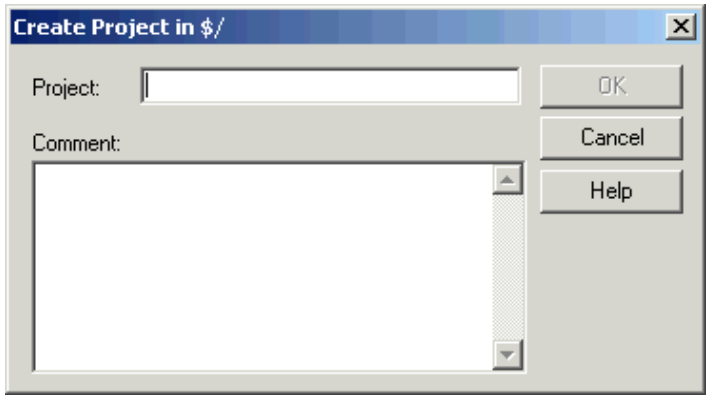
Procedure: How to Create Projects in Visual SourceSafe

SourceSafe projects, like DataMigrator application directories, work essentially like file folders. You need to create a project folder to store your DataMigrator files.

1. Launch Visual SourceSafe.
2. Right-click the root project or a subproject where you want to store your DataMigrator files and select *Create Project*.

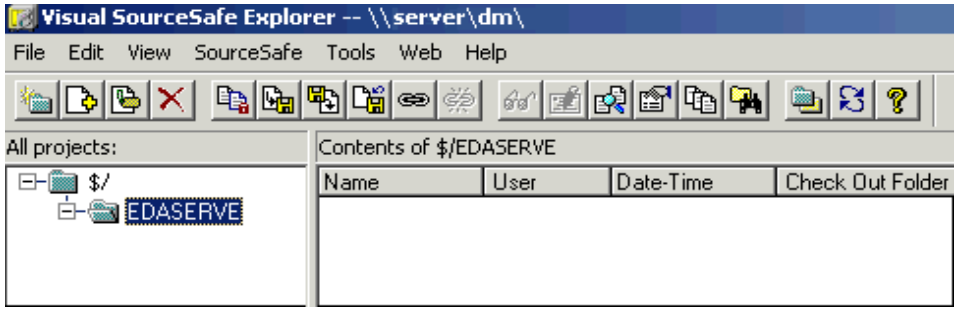


The Create Project dialog box opens.



3. Type in a name for the project. Using the node name, like EDASERVE, will make it easier to recognize the connection between DataMigrator and Visual SourceSafe.
4. Click *OK*.

The project is added to SourceSafe.



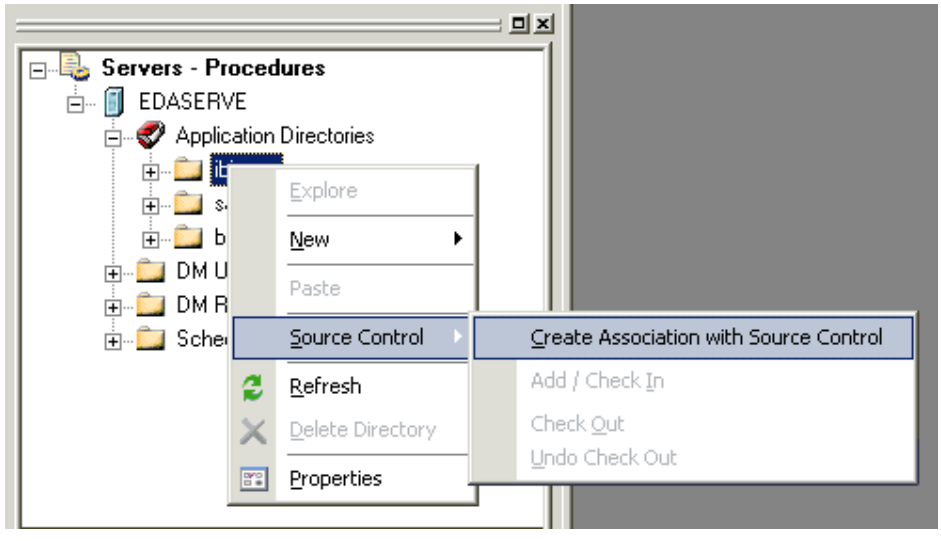
Normally, SourceSafe requires you to set a working folder, but since DataMigrator is a client/server application, that is not required. DataMigrator sets an internal working directory for files under source control and pushes those files to the server when they are changed.

Procedure: How to Create or Change Associations Between DataMigrator Application Directories and SourceSafe Projects

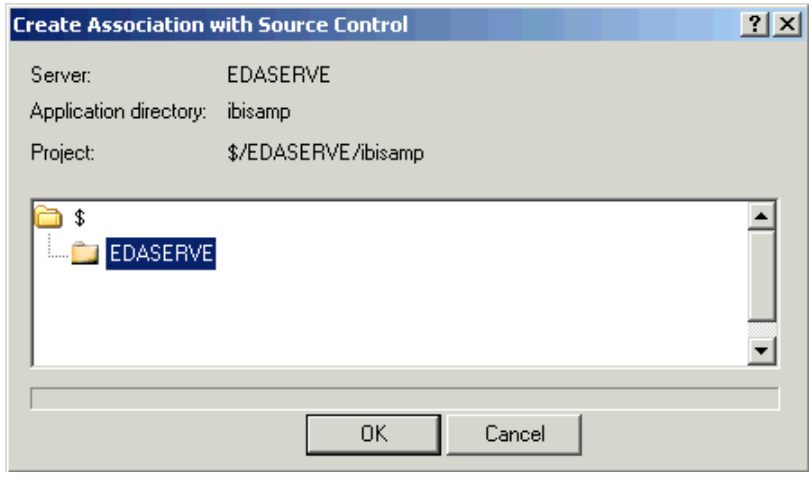
Creating a SourceSafe project provides a place to manage your DataMigrator files. Creating an association between your application directories and that SourceSafe project tells DataMigrator where to manage those files in SourceSafe.

In the navigation pane of the Data Management Console:

1. Right-click an application directory and select *Source Control>Create Association with Source Control*.

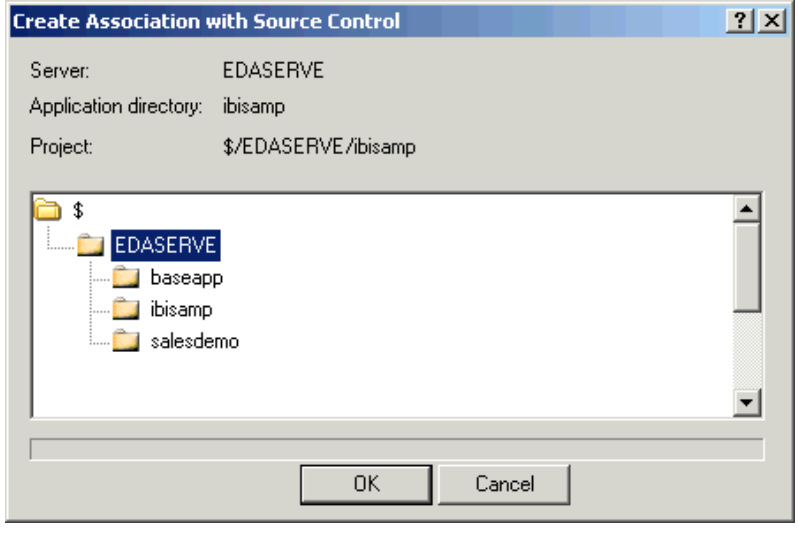


The Create Association with Source Control dialog box opens, which shows your SourceSafe projects.



2. Select a project folder, in this case EDASERVE, and click *OK*.

Associating an application directory with the root project folder will create a subfolder for that application directory in SourceSafe.



You can also use this procedure to change the association of an application directory to another SourceSafe project.

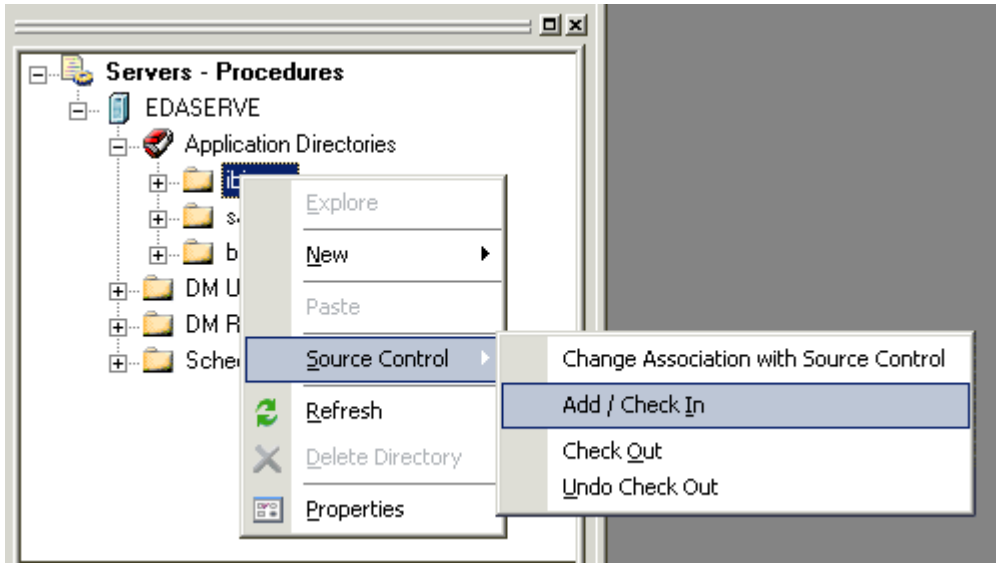
Note: While the Data Management Console lists application directories according to their position in your App Path, SourceSafe lists project folders alphabetically.

Procedure: How to Add Files to SourceSafe

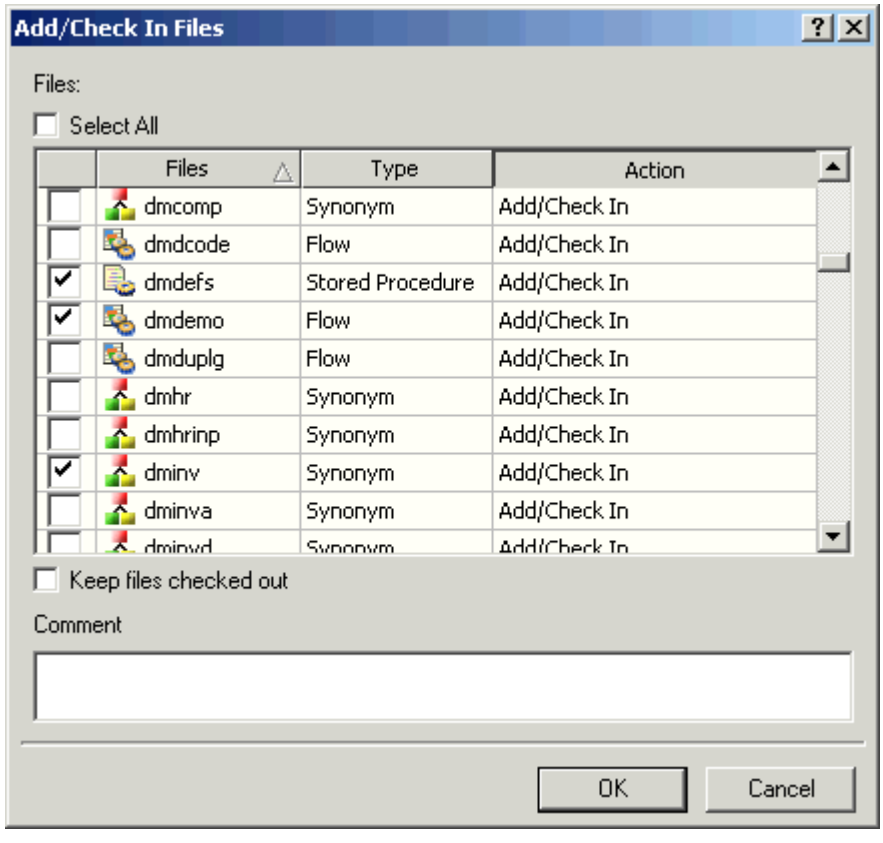
Once you have created SourceSafe projects and created associations in the Data Management Console, the next step is to actually put the files under source control. In other words, you need to add them to a SourceSafe project. You can add individual files or select a group of files from an application directory.

Note: Files that are added or checked into SourceSafe become read-only until they are checked out. In the navigation pane of the Data Management Console:

1. Right-click an application directory or an individual flow, stored procedure or synonym, and select *Source Control>Add/Check In*.



The *Add/Check In* dialog box opens.



2. Select the files you want to add to SourceSafe. Files that are added are automatically checked in.

   Tip: You can use the Select All check box to both select and deselect all the files.

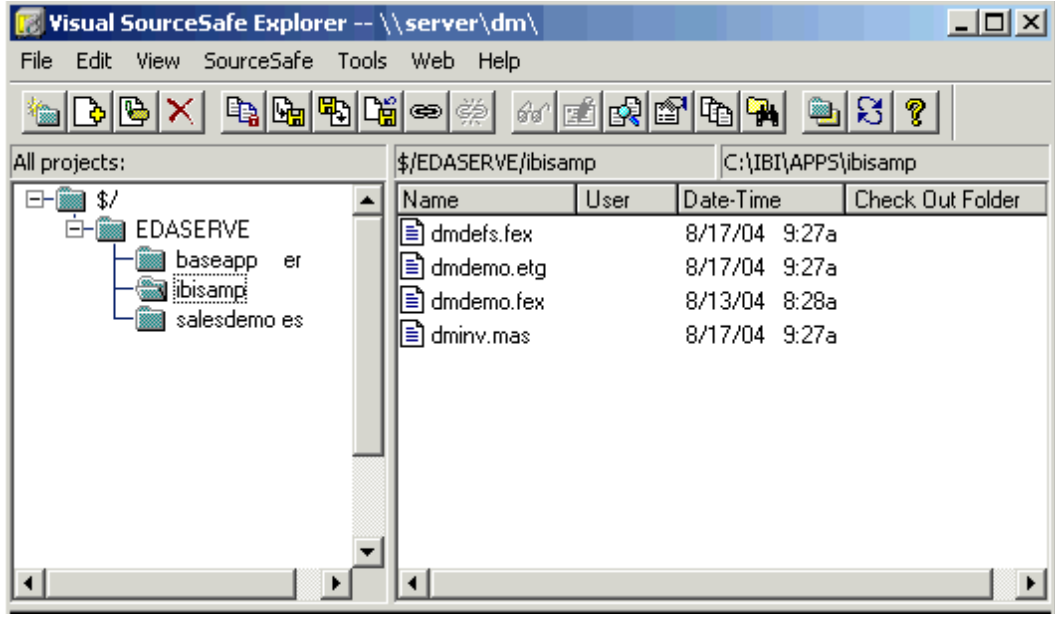
3. Optionally, you can add comments by typing them into the *Comments* text box. If you are adding multiple files, they will all have the same comment.

4. Optionally, you can check the files out by selecting the *Keep files checked out* check box.

5. Click *OK*.

   Note: The default listing for files in the Add/Check In dialog box is by Type. To list them by name, click the *Files* column heading.

If you open Visual SourceSafe, you will see that the files from the DataMigrator application directory have been added to the corresponding SourceSafe project folder. The synonym (dminv) has a .mas extension and the stored procedure (dmdefs) has a .fex extension. The flow (dmdemo) has two files stored in SourceSafe. The source code is stored in the file with the .fex extension. The file with the .etg extension holds the information required for the Data Management Console interface.

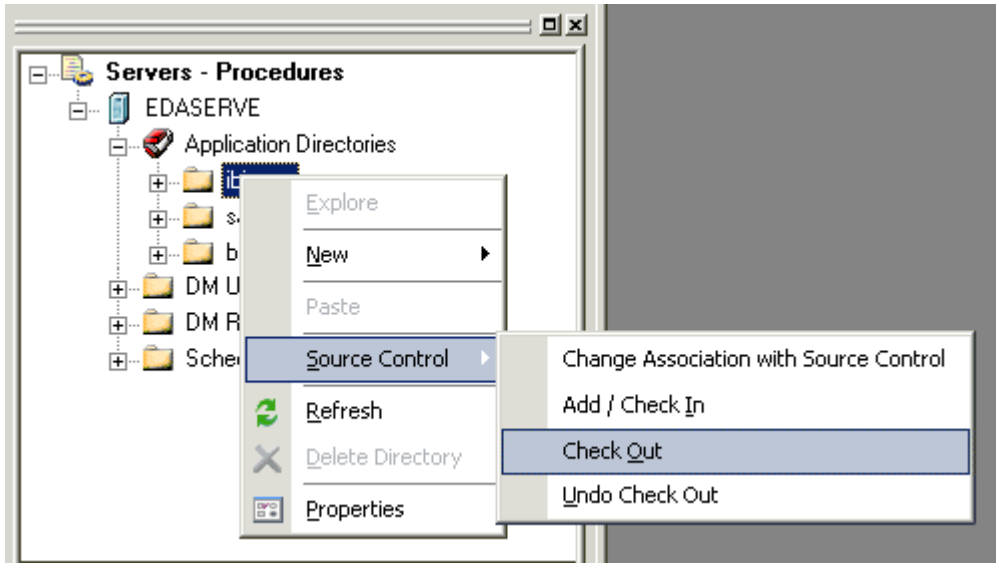


Procedure: How to Check Out Files From SourceSafe

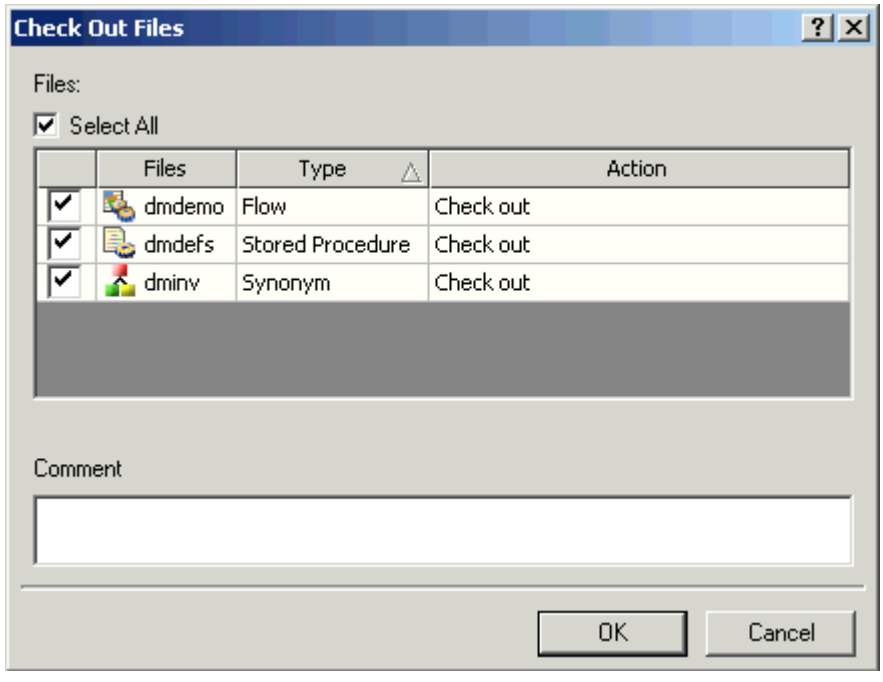
For files that are being source managed using Visual SourceSafe, you must check them out before you can make changes.

In the navigation pane of the Data Management Console:

1. Right-click an application directory or an individual flow, stored procedure or synonym, and select *Source Control*>*Check Out*.



The *Check Out* dialog box opens.



2. Select the files you want to check out.

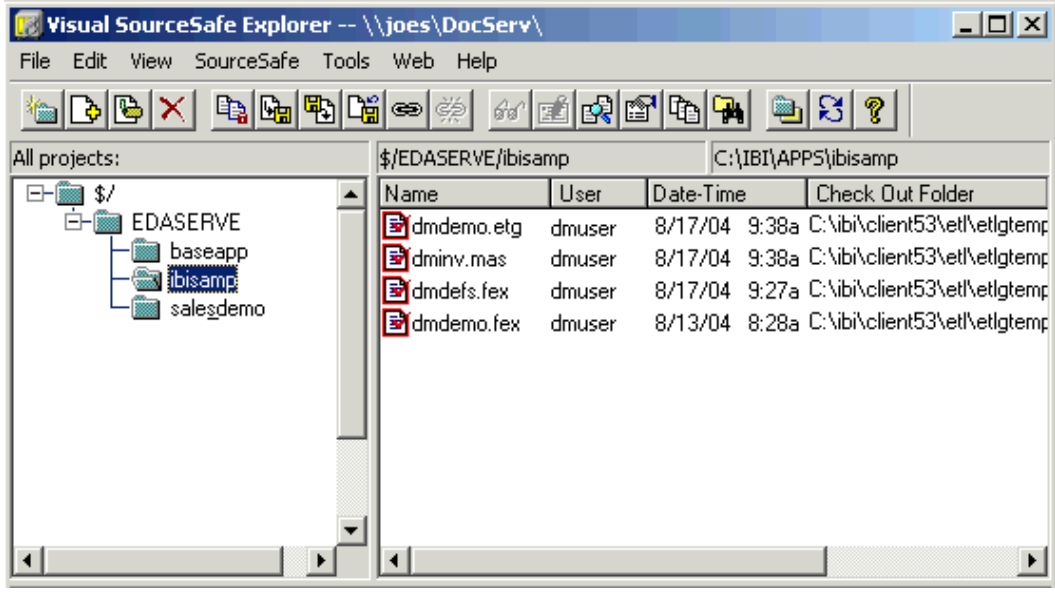
   Tip: You can use the Select All check box to both select and deselect all the files.

3. Optionally, you can add comments by typing them into the *Comments* text box. If you are checking out multiple files, they will all have the same comment.

4. Click *OK*.

   Note: The default listing for files in the Check Out dialog box is by Type. To list them by name, click the *Files* column heading.

If you open Visual SourceSafe, you will see that the files that you checked out from the Data Management Console have been checked out of SourceSafe. These files are no longer read-only, which allows you to make changes before checking them back into SourceSafe.

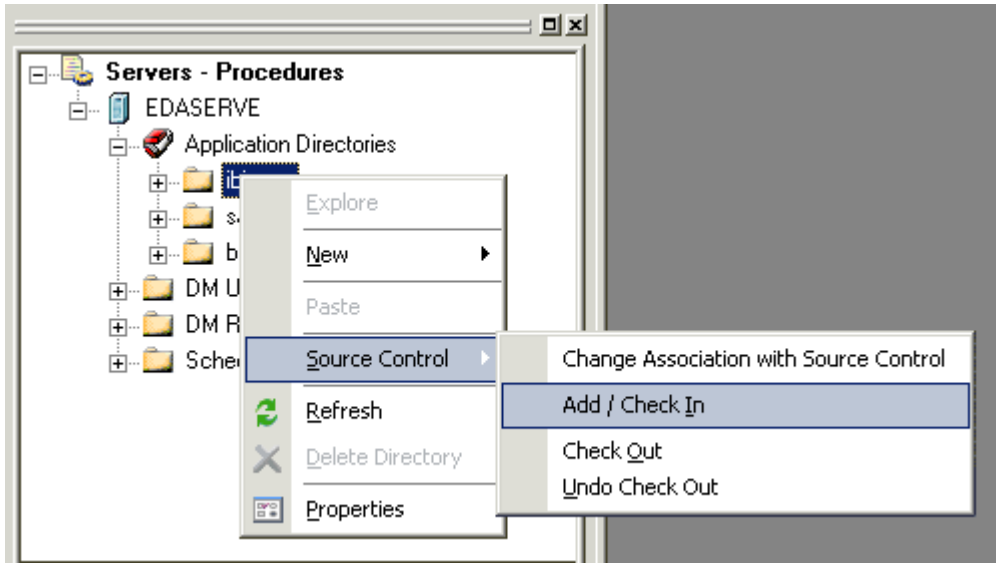


Procedure: How to Check Files Into SourceSafe

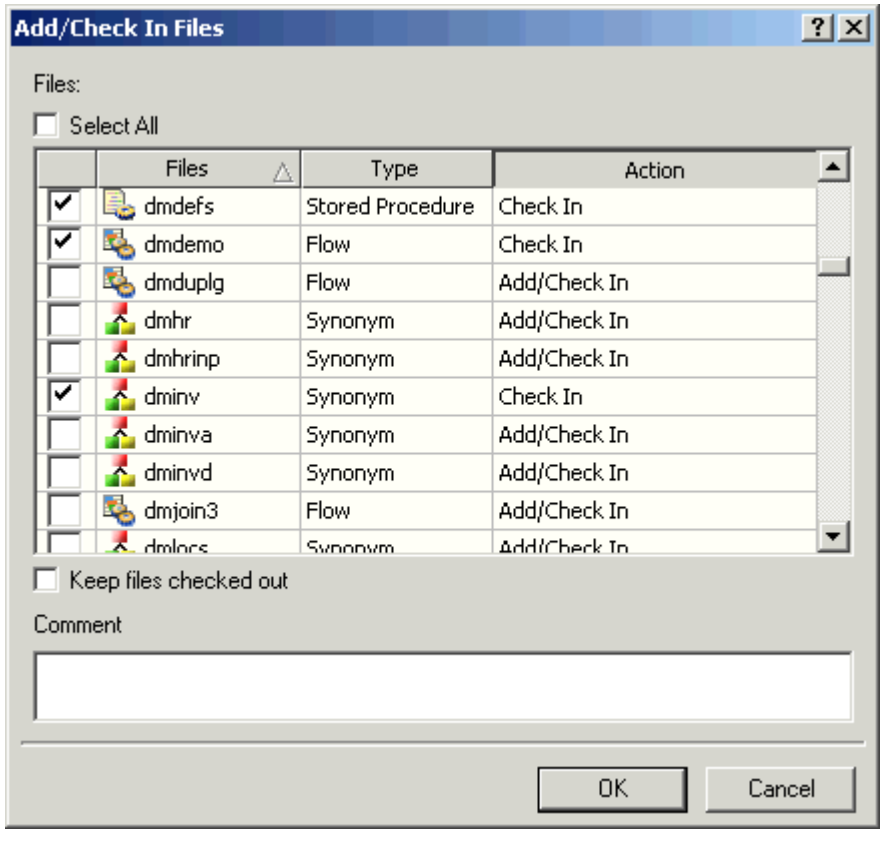
After you have made changes to files, you must check them back into SourceSafe to maintain a record of those changes. Files that are checked in are copied back to the server.

In the navigation pane of the Data Management Console:

1. Right-click an application directory or an individual flow, stored procedure or synonym, and select *Source Control>Add/Check In*.



The *Add/Check In* dialog box opens.



2. Select the files you want to check in. Only files that have been checked out have Check In as the possible action. The action for files that have not been added to SourceSafe is Add/Check In.

   Tip: You can use the Select All check box to both select and deselect all the files.

3. Optionally, you can add comments by typing them into the *Comments* text box. If you are checking in multiple files, they will all have the same comment.

4. Optionally, you can keep files checked out by selecting the *Keep files checked out* check box.

5. Click *OK*.

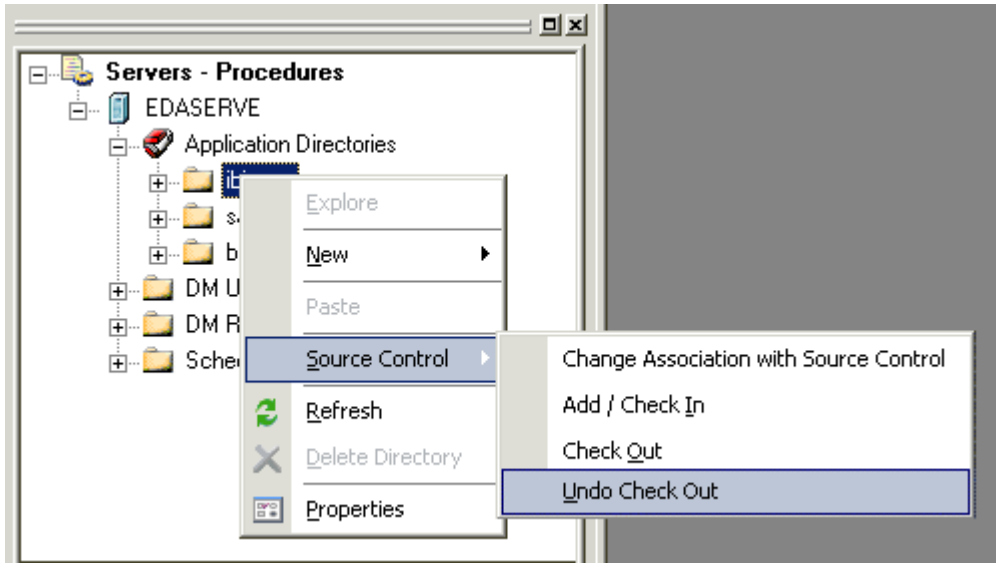
   Note: The default listing for files in the Add/Check In dialog box is by Type. To list them by name or action, click the *Files* or *Action* column headings.

Procedure: How to Undo a Check Out From SourceSafe

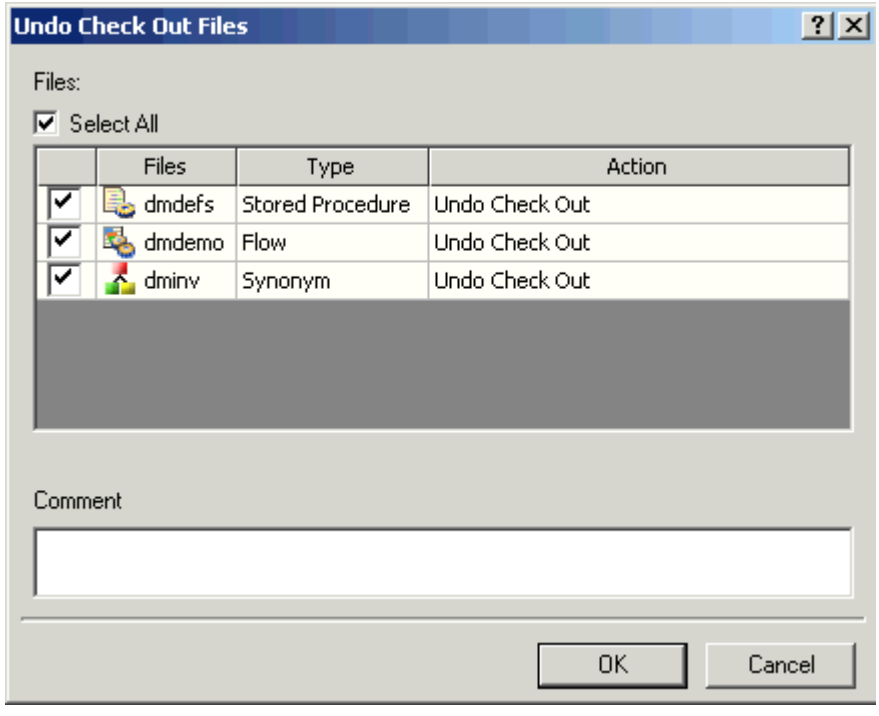
If you decide that you do not want to make changes to a file, you can undo its check out from SourceSafe. The file becomes read-only again, and SourceSafe maintains the version as it existed before the file was checked out.

In the navigation pane of the Data Management Console:

1. Right-click an application directory or an individual flow, stored procedure or synonym, and select *Source Control>Undo Check Out*.



The *Undo Check Out* dialog box opens.



2. Select the file(s) whose check out you want to undo.

   Tip: You can use the Select All check box to both select and deselect all the files.

3. Click *OK*.

   Note: The default listing for files in the Undo Check Out dialog box is by file name. To list them by Type, click the *Type* column heading.

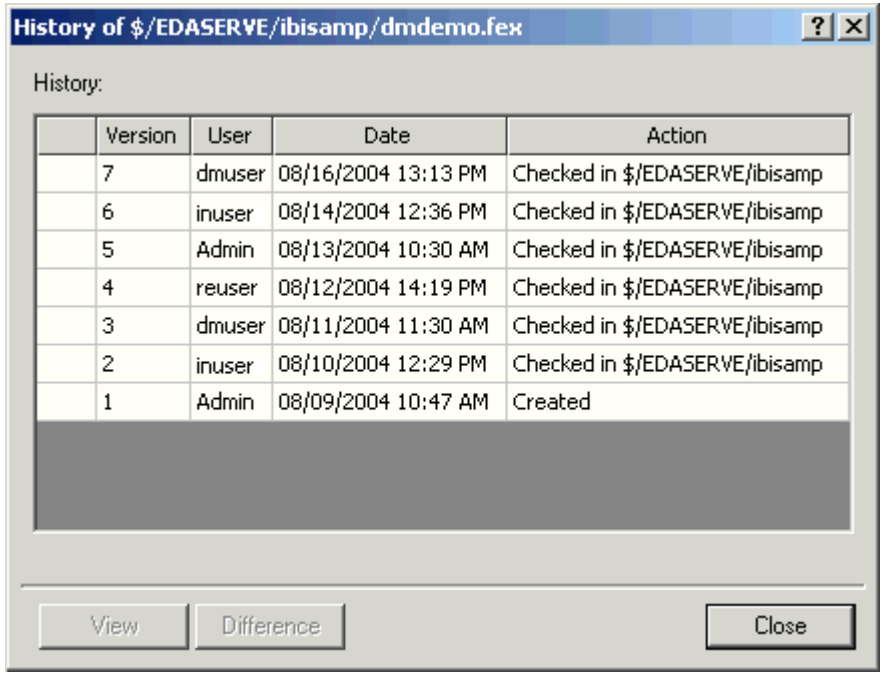
Procedure: How to View a File's History, Versions, and Differences

A file's source management history records each date and time it was checked in, as well as the user involved.

In the navigation pane of the Data Management Console:

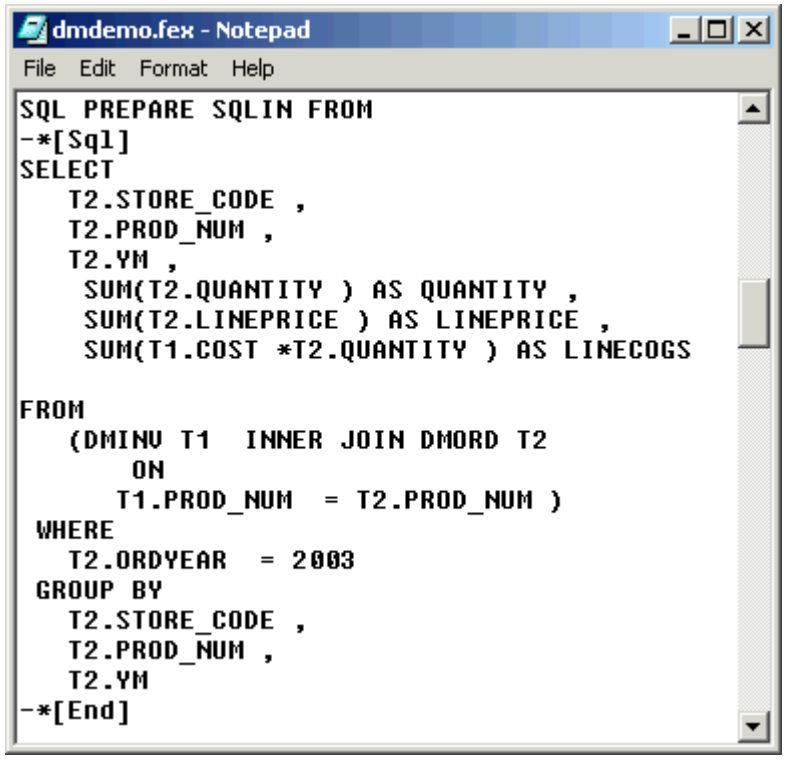
1. Right-click an individual flow, stored procedure or synonym, and select *Source Control>History*.

   The History dialog box opens, showing the user, date and time for each check in.


History of $/EDASERVE/ibisamp/dmdemo.fex
History:
Version
User
Date
Action
7 dmuser 08/16/2004 13:13 PM Checked in $/EDASERVE/ibisamp
6 inuser 08/14/2004 12:36 PM Checked in $/EDASERVE/ibisamp
5 Admin 08/13/2004 10:30 AM Checked in $/EDASERVE/ibisamp
4 reuser 08/12/2004 14:19 PM Checked in $/EDASERVE/ibisamp
3 dmuser 08/11/2004 11:30 AM Checked in $/EDASERVE/ibisamp
2 inuser 08/10/2004 12:29 PM Checked in $/EDASERVE/ibisamp
1 Admin 08/09/2004 10:47 AM Created
View
Difference
Close

2. Optionally, to view a version of the file, select a row and click the *View* button.

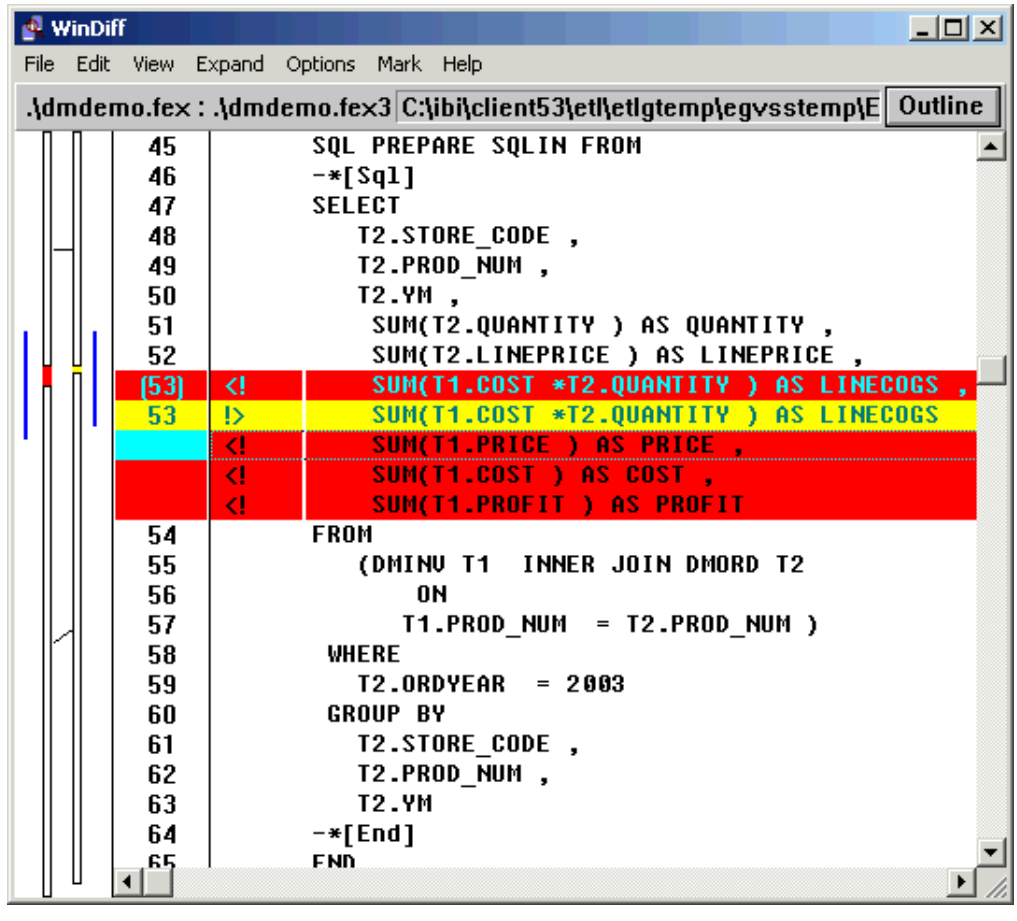
The code for that particular version opens in Notepad. This is an example of a data flow's code.



3. Optionally, to view the differences between two versions, select two rows by clicking one and CTRL-clicking a second row. Click the *Difference* button.

   Note: To use the Difference feature, you must have WinDiff installed. Windiff is part of the Windows SDK and is available from Microsoft.

The difference is shown in WinDiff, which creates an ASCII comparison of the two files. In this case, the PRICE, COST, and PROFIT columns were added to the SQL Object through the Selected Columns window. Since LINECOGS is no longer the last line, it now has a comma. The changes are highlighted here.



CHAPTER 14

Resource Analyzer and Resource Governor Enhancements

Topics:

- Rebuild SMCTRL From Resource Analyzer and Resource Governor
- Location Information Collection
- Collecting CPU and Elapsed Time in Reports in Milliseconds
- Monitoring of MODIFY
- Delete by Date Range in Repository
- Global Rules
- Capture Information for Cancelled Queries
- Managed Reporting Information Capture

This section describes Resource Analyzer and Resource Governor new features in Version 5 Release 3.

For more information about Resource Analyzer, see the *iWay Resource Analyzer Administrator's and User's Manual*.

For more information about Resource Governor, see the *iWay Resource Governor Administrator's and User's Manual*.

Rebuild SMCTRL From Resource Analyzer and Resource Governor

You can reconfigure Resource Analyzer and Resource Governor from the Web Console. This feature allows the administrator to specify the adapter and database used to store the Resource Analyzer/Governor internal information from the Web Console. It removes the requirement that Resource Analyzer/Governor can only create its internal tables in the first database definition for a adapter that is defined in the profile.

Location Information Collection

This feature provides a report that displays an overview of the data source, including its location, the number of times it was accessed, and the number of users accessing the data source.

Collecting CPU and Elapsed Time in Reports in Milliseconds

To provide more accuracy in resource reports, the elapsed time collected for a request is now in milliseconds (10,000ths of a second). Both CPU and elapsed time use the same increment. All reports have been changed to display CPU and elapsed time as hhhh:mm:ss.nnnn for detail reports and hhhh:mm:ss for summary reports.

Monitoring of MODIFY

This feature monitors all tables used by the FOCUS MODIFY command, including COMBINEs, cross reference files, and lookup files. Resource Analyzer monitors the date, time, user ID, databases used, CPU usage, and elapsed time.

Delete by Date Range in Repository

This feature allows users to delete monitored data for a given date range.

Global Rules

This feature provides the capability to create rules for the server that can be applied to all requests regardless of the data source used.

Capture Information for Cancelled Queries

This feature captures information for queries that are cancelled due to high resource consumption (not for MVS OS/390 server).

Managed Reporting Information Capture

This feature captures the full description, short name, application directory, base directory, domain name, and both Managed Reporting and server user ID.

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